JVC

SERVICE MANUAL

Hi-Fi STEREO VIDEO CASSETTE RECORDER

HR-S5000E/EG

S-VHS VHS PAL 625

HQ High Quality

SPECIFICATIONS

Format	: S-VHS/VHS PAL standard with Hi-Fi audio
Video recording system	: Rotary two-head helical scan system with slant double-azimuth combination video heads
Hi-Fi audio recording system	: Deep-layer recording system conforming to stereo Hi-Fi VHS standard
No. of audio channels	: 2 Hi-Fi audio channels 1 normal audio channel
Video signal system	: PAL colour and separated Y/C signals, 625 lines
Tape width	: 12.65 mm
Tape speed (SP)	: 23.39 mm/sec
(LP)	: 11.70 mm/sec
Maximum recording time (SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette
Temperature	
Operating	: 5°C to 40°C
Storage	: -20°C to 60°C
Humidity	
Operating	: 5 % to 80 %
Storage	: 35 % to 80 %
Power requirement	: 220 V∿, 50/60 Hz
Power consumption	: 44 W
Video	
Input	: 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	: 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter) with BILDSCHÄRFE control at centre position
Horizontal resolution	: More than 400 lines (S-VHS)/ 250 lines (VHS) with BILDSCHÄRFE control at centre position
Audio	
Input	: Mic: -67 dBs, high impedance, unbalanced AUDIO EING. connector (RCA x 2): -8 dBs, 50 k-ohms, unbalanced A/V1 EING./AUSG. and A/V2 EING. socket (21-pin Peri connector): -3.8 dBs (CENELEC standard), 10 k-ohms, unbalanced
Output level	: A/V1 EING./AUSG. socket (21-pin Peri connector): -3.8 dBs (CENELEC standard), high impedance load AUDIO AUSG. connector (RCA x 2): -6 dBs, high impedance load
Output impedance	: Less than 1 k-ohm, unbalanced
Signal-to-noise ratio	: More than 40 dB
Frequency range	: 70 Hz to 10,000 Hz
Hi-Fi audio	
Frequency response	: 20 Hz – 20,000 Hz
Dynamic range	: More than 90 dB
Wow and flutter	: Less than 0.005 % WRMS
TV tuner/RF section	
Channel storage capacity	: 48 channels
Aerial input	: VHF 47 – 89 MHz 104 – 300 MHz 302 – 470 MHz UHF 470 – 862 MHz
Aerial output	: UHF channels 32 – 40 (Adjustable)
Digital clock/timer	
Clock display	: 24-hour fluorescent digital display with day and date indication
Reference frequency	: Quartz controlled
Start time setting	: Within one year
Programming capacity	: 8 programmes
Dimensions	: 435 mm(W) x 105 mm(H) x 380 mm(D)
Weight	: 7.4 kg
Provided accessories	: Aerial cable, Infrared remote control, "R6"-size battery x 2, Audio cable (RCA-RCA) S-Video cable (4-pin/4-pin) Cassette tape (SE-180) VPV adapter
Optional accessory	: RGB signal converter KM-V7EG

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

COPYRIGHT © 1988 VICTOR COMPANY OF JAPAN, LTD.

No. 82070
September 1988

NOTES: 1. For a technical description, please refer to Technical Guide VTG82029 HR-S5000 PAL.
2. For General information in Sirvice Manual, please refer to Service Manual of General information No. 82054.

TABLE OF CONTENTS

Section Title Page
Important Safety Precautions
INSTRUCTIONS

1. MECHANISM ADJUSTMENT

1.1 GENERAL ..... 1 - 1
- 1.1.1 Precautions ..... 1 - 1
- 1.1.2 Required test equipment, fixtures and tools ..... 1 - 1
- 1.1.3 Disassembly ..... 1 - 2
  - External covers ..... 1 - 2
  - Circuit boards ..... 1 - 3
- 1.1.4 Layout of main parts ..... 1 - 4

1.2 MAIN ASSEMBLY REPLACEMENT ..... 1 - 5
1.3 ASSEMBLY PROCEDURE OF MECHANISM ..... 1 - 7
1.4 CONFIRMATION AND ADJUSTMENT ..... 1 - 9
1.5 TAPE TRANSPORT CHECKS AND ADJUSTMENT PREPARATIONS 1-10
1.6 INTERCHANGEABILITY CHECKS AND ADJUSTMENTS 1-11

2. ELECTRICAL ADJUSTMENTS

2.1 PREPARATION ..... 2 - 1
- 2.1.1 Required test equipment ..... 2 - 1
- 2.1.2 Check and adjustment steps ..... 2 - 2

2.2 SWITCHING REGULATOR CIRCUIT ..... 2 - 3
2.3 TIMER CIRCUIT ..... 2 - 3
2.4 SERVO CIRCUIT ..... 2 - 4
2.5 VIDEO CIRCUIT ..... 2 - 5
2.6 AUDIO CIRCUIT 2-10
2.7 IF CIRCUIT 2-11
2.8 DEMODULATOR CIRCUIT 2-12
2.9 PRE/REC CIRCUIT 2-13

3. CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD LOCATIONS ..... 3 - 1
3.2 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS ..... 3 - 2
3.3 POWER SYSTEM BLOCK DIAGRAM ..... 3 - 3
3.4 BOARD INTERCONNECTIONS ..... 3 - 4
3.5 SERVO BLOCK DIAGRAM ..... 3 - 6
3.6 MECHACON BLOCK DIAGRAM ..... 3 - 7
3.7 VIDEO BLOCK DIAGRAM ..... 3 - 8
3.8 PRE/REC AMP BLOCK DIAGRAM 3-10
3.9 AUDIO BLOCK DIAGRAM 3-11
3.10 SWITCHING POWER SUPPLY AND REGULATOR SCHEMATIC DIAGRAMS 3-12
3.11 SWITCHING POWER SUPPLY AND REGULATOR CIRCUIT BOARDS 3-13
3.12 MECHANISM CONTROL SCHEMATIC DIAGRAM 3-14
3.13 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY SCHEMATIC DIAGRAMS 3-15
3.14 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY CIRCUIT BOARDS 3-16
3.15 MECHANISM CONTROL AND AUDIO/CONTROL HEAD CIRCUIT BOARDS 3-17
3.16 SERVO AND SERVO SUB SCHEMATIC DIAGRAMS 3-18
3.17 SERVO AND SERVO SUB CIRCUIT BOARDS 3-19
3.18 VIDEO SCHEMATIC DIAGRAM 3-20
3.19 VIDEO CIRCUIT BOARD 3-22
3.20 JACK SCHEMATIC DIAGRAM AND CIRCUIT BOARD 3-23
3.21 FLYING ERASE SCHEMATIC DIAGRAM AND CIRCUIT BOARD 3-23
3.22 PRE/REC AMP SCHEMATIC DIAGRAM 3-24
3.23 PRE/REC AMP CIRCUIT BOARD 3-25
3.24 AV IN/OUT SCHEMATIC DIAGRAM 3-26
3.25 AV IN/OUT CIRCUIT BOARD 3-27
3.26 AUDIO SCHEMATIC DIAGRAM 3-28
3.27 AUDIO CIRCUIT BOARD 3-29
3.28 IF SCHEMATIC DIAGRAM 3-30
3.29 IF CIRCUIT BOARD 3-31
3.30 TUNER CONTROL SCHEMATIC DIAGRAM 3-32
3.31 TUNER CONTROL CIRCUIT BOARD 3-33
3.32 DEMODULATOR SCHEMATIC DIAGRAM 3-34
3.33 DEMODULATOR CIRCUIT BOARD 3-35
3.34 TIMER SCHEMATIC DIAGRAM 3-36
3.35 TIMER CIRCUIT BOARD 3-37
3.36 DISPLAY SCHEMATIC DIAGRAM 3-38
3.37 DISPLAY CIRCUIT BOARD 3-39
3.38 OPERATION AND STEP SCHEMATIC DIAGRAMS 3-40
3.39 OPERATION AND STEP CIRCUIT BOARDS 3-41
3.40 SWITCH SCHEMATIC DIAGRAM 3-42
3.41 SWITCH CIRCUIT BOARD 3-43
3.42 TERMINAL SCHEMATIC DIAGRAM 3-44
3.43 TERMINAL CIRCUIT BOARD 3-45
3.44 REMOTE CONTROL SCHEMATIC DIAGRAM 3-46
3.45 RF CONVERTER SCHEMATIC DIAGRAM 3-47

4. EXPLODED VIEWS AND PARTS LIST

4.1 CABINET ASSEMBLY <M2> ..... 4 - 2
4.2 CHASSIS ASSEMBLY <M3> ..... 4 - 3
4.3 MECHANISM ASSEMBLY (1) <M4> ..... 4 - 4
MECHANISM ASSEMBLY (2) <M4> ..... 4 - 4
4.4 PACKING ASSEMBLY <M1> ..... 4 - 6

5. ELECTRICAL PARTS LIST

SWITCHING POWER SUPPLY BOARD ASSEMBLY <01><02> ..... 5 - 1
MECHACON BOARD ASSEMBLY <04> ..... 5 - 2
VIDEO BOARD ASSEMBLY <05> ..... 5 - 3
TERMINAL BOARD ASSEMBLY <06> ..... 5 - 9
IF BOARD ASSEMBLY <07> 5-10
TUNER CTL BOARD ASSEMBLY <08> 5-11
AUDIO BOARD ASSEMBLY <09> 5-12
AUDIO VIDEO IN/OUT BOARD ASSY <10> 5-14
AUDIO CONTROL HEAD BOARD <12> 5-16
DEMODULATOR BOARD ASSEMBLY <14> 5-16
TIMER BOARD ASSEMBLY <20> 5-17
OPERATION BOARD ASSEMBLY <22> 5-18
SW/JACK BOARD ASSEMBLY <26><36> 5-18
DISPLAY/STEP BOARD ASSEMBLY <27><37> 5-19
SERVO SUB BOARD ASSEMBLY <39> 5-20
PRE/REC AMP BOARD ASSEMBLY <43> 5-20
FLYING ERASE BOARD ASSEMBLY <46> 5-22
SERVO BOARD ASSEMBLY <48> 5-23
DECK TERMINAL BOARD ASSEMBLY <51><53> 5-24
RELAY BOARD ASSEMBLY <52> 5-24
END SENSOR BOARD ASSEMBLY <54> 5-24
CASSETTE HOUSING BOARD <56> 5-24
UPPER DRUM BOARD ASSEMBLY <62><63> 5-24

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

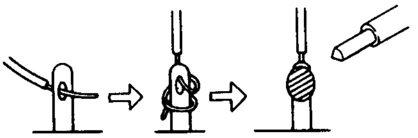


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

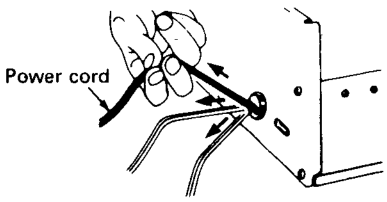


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

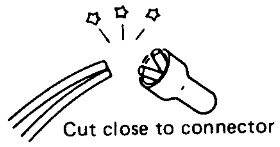


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

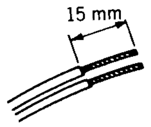


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

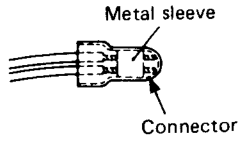


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

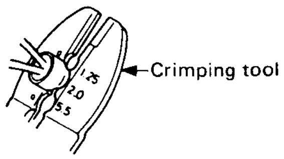


Fig. 6

(5) Check the four points noted in Fig. 7.

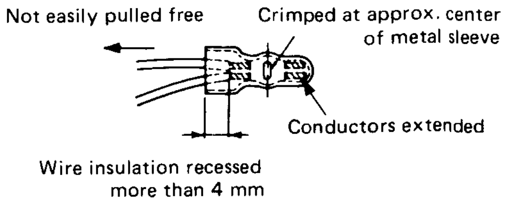

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

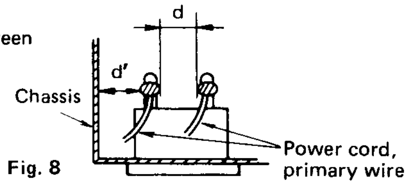


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

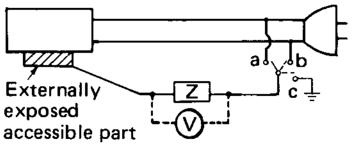


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

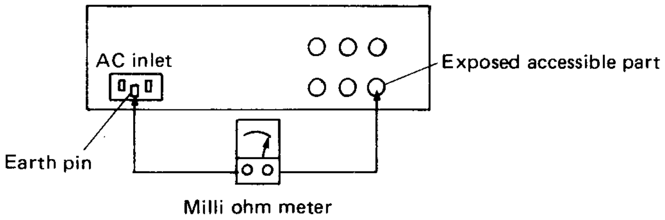


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
MECHANISM ADJUSTMENT

1.1 GENERAL

1.1.1 Precautions

IMPORTANT:

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it.
3. The tape transport mechanism has been precisely adjusted at the factory and ordinarily does not require readjustment.
4. When removing a part, be very careful not to damage or displace other parts. (Be especially careful with the tape guides and rotary video head drum.)
5. For service procedures that call for operation of the set when the cassette housing is separated from the main-deck, perform as below.

1) Set a sheet of insulated material on the right of the chassis.
2) Remove the cassette housing from the main-deck and place it on the insulated sheet, but do not disconnect the connector from the MECHACON board.
3) Insert a cassette into the cassette housing. The housing mechanism functions to retract the cassette.
4) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
5) The desired modes can be obtained by using the operation switches.

1.1.2 Required test equipment, fixtures and tools

For proper mechanical adjustment, the following test equipment, fixtures and tools are strongly recommended. Without them, a long trial-and-error period would be necessary, resulting in possible damage. In addition, general-purpose tools are required.

1. Test equipment required:
   Color television or monitor
   Oscilloscope: Wide-band, dual trace, triggered, delayed sweep
   Recording tape
   Alignment tapes

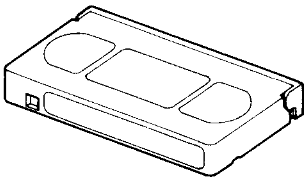
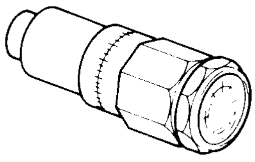
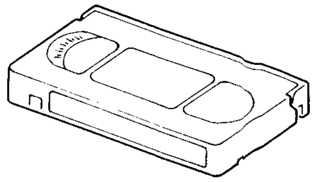
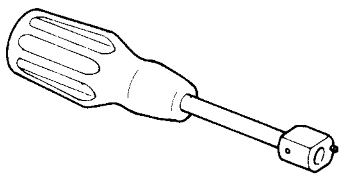
Alignment tape MH-2, MH-2L, MH-F2 	Torque gauge assembly PUJ48075-2 	Back tension cassette gauge PUJ48076-2 
A/CTL head position tool PUJ47351-2 		

Table 1-1-1 Fixtures and tools

1.1.3 Disassembly

1.1.3(A) External covers (See Fig. 1-1-1(A)

1. Top cover
1) Take out four screws Ⓐ and one screw Ⓑ from the right, left and rear sides of the set.
2) Tilt up the rear end of the top cover in direction ①, then remove the top cover.

2. Front panel
1) Remove the top cover.
2) Carefully bend three hooks Ⓒ of the front panel assembly from the upper side of the chassis in order to disengage the hooks from the chassis.
3) Pull the front panel assembly toward direction ② to disengage three hooks Ⓓ of the front panel assembly from the bottom of the chassis, then remove the front panel assembly.

3. Bottom cover
1) Remove the top cover.
2) Take out four screws Ⓔ from the bottom of the set, then remove four feet.
3) Take out three screws Ⓕ from the bottom of the set, then remove the bottom cover.

4. Cassette housing assembly
1) Take out two screws Ⓖ from the video board assembly and take out two screws Ⓗ from the chassis.
2) Pull the cassette housing assembly toward front to disengage the two claws Ⓙ.
3) Carefully tilt up the cassette housing assembly in direction ③ and disconnect connector Ⓚ, then remove the cassette housing assembly.

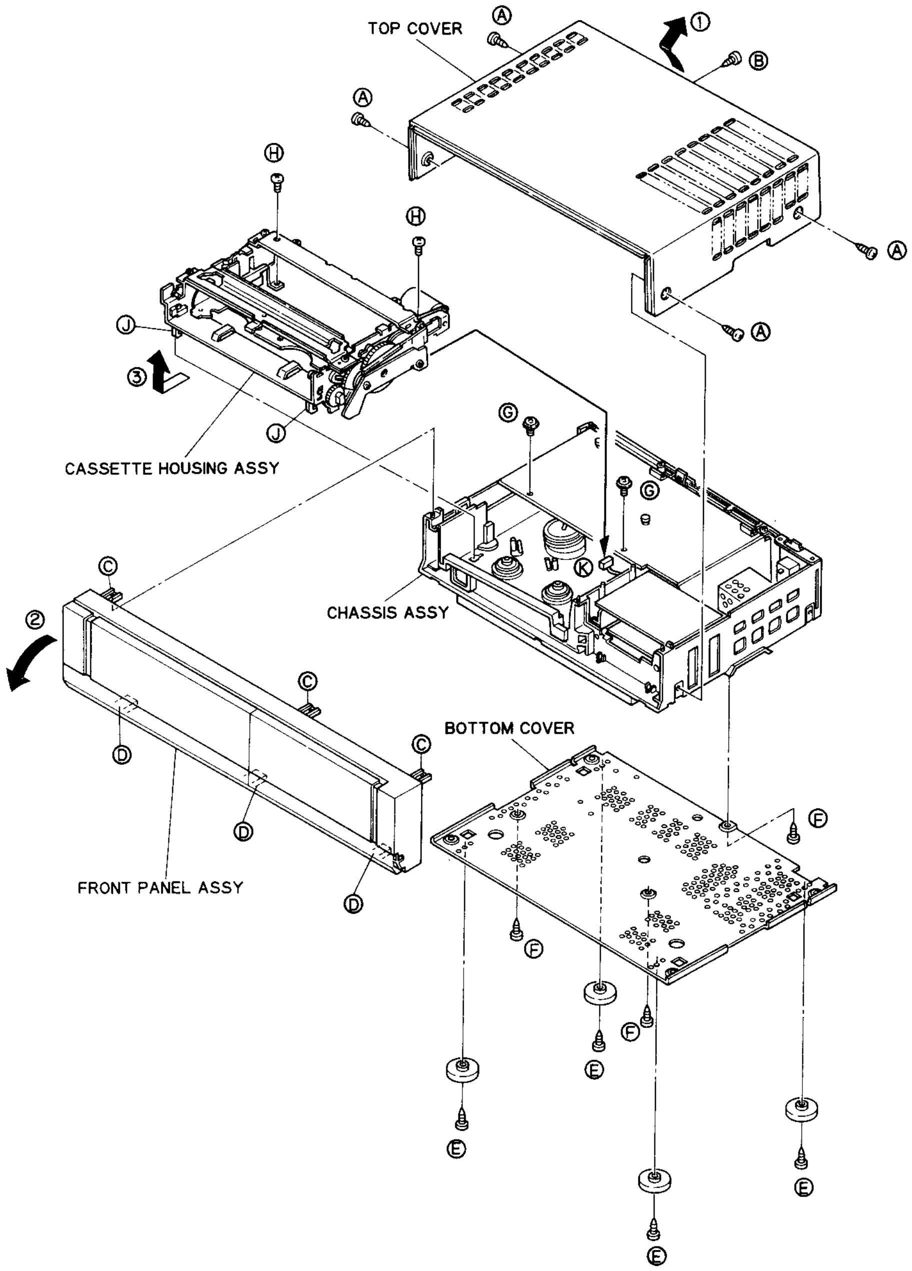


Fig. 1-1-1(A)

1.1.3(B) Circuit boards (See Fig. 1-1-1(B))

1. Video board assembly and Terminal board assembly
1) Take out three screws Ⓛ and one screw Ⓜ , then raise the video board and Terminal board assemblies to remove them.

2. Tuner CTL board assembly and IF board assembly
1) Take out two screws Ⓝ and remove the Tuner CTL board assembly and IF board assembly.

3. Flying Enase board assembly
1) Take out one screw Ⓟ and remove the bracket.
2) Raise the Flying Erase board assembly to remove it.

4. Mechacon board assembly, AV IN/OUT board assembly and Servi board assembly.
1) Take out three screws, then remove the Mechacon board assembly, AV IN/OUT board assembly and Servo board assembly.

Note: Servo and AV IN/OUT board assemblies are connected to the Mechacon board assembly.

5. Servo Sub board assembly
1) Take out one screw Ⓡ and remove the bracket.
2) Raise the Servo Sub board assembly chassis remove it.

6. Audio board assembly
1) Take out two screws Ⓢ and remove the Audio board assembly and shield plate assembly.

7. Timer board assembly
1) Take out two screws Ⓣ and remove the Timer board assembly.

8. Switching Power Supply board assembly and Regulator board assembly
1) Take out three screws Ⓤ and remove the Switching Power Supply board assembly and Regulator board assembly.

9. Demodulator board assembly
1) Take out two screws Ⓥ and remove the Demodulator board assembly.

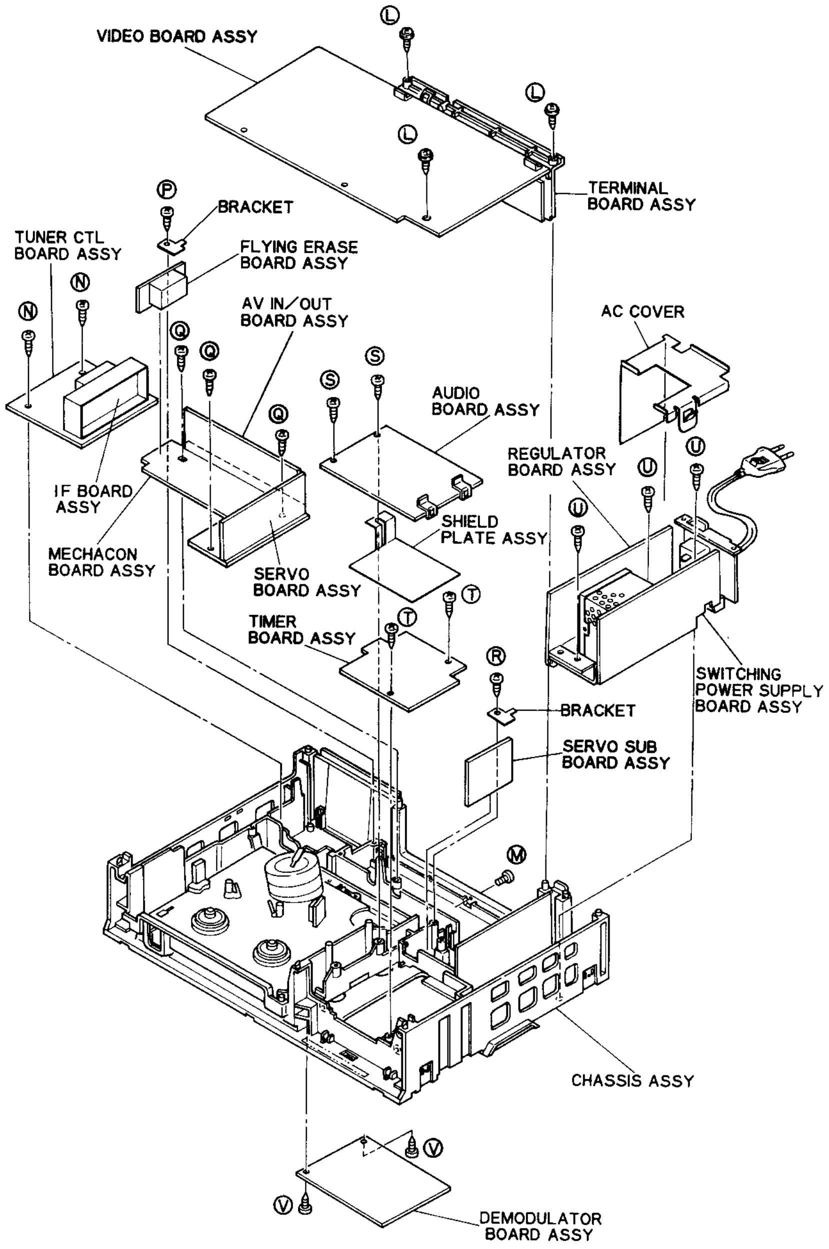

VIDEO BOARD ASSY
Ⓛ
Ⓛ
Ⓛ
TERMINAL BOARD ASSY
Ⓟ
BRACKET
TUNER CTL BOARD ASSY
FLYING ERASE BOARD ASSY
Ⓝ
Ⓝ
AV IN/OUT BOARD ASSY
AC COVER
Ⓠ
Ⓠ
Ⓠ
Ⓢ
Ⓢ
AUDIO BOARD ASSY
REGULATOR BOARD ASSY
Ⓤ
Ⓤ
Ⓤ
IF BOARD ASSY
SHIELD PLATE ASSY
MECHACON BOARD ASSY
SERVO BOARD ASSY
Ⓣ
Ⓣ
TIMER BOARD ASSY
Ⓡ
BRACKET
SWITCHING POWER SUPPLY BOARD ASSY
SERVO SUB BOARD ASSY
Ⓜ
CHASSIS ASSY
Ⓥ
Ⓥ
DEMODULATOR BOARD ASSY

Fig. 1-1-1(B)

1.1.4 Layout of main parts

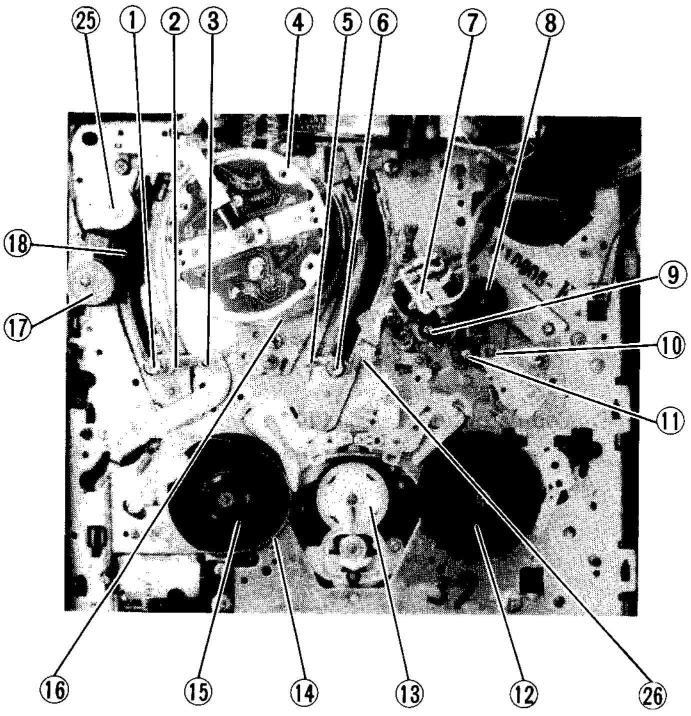


Fig. 1-1-2 Top view of main-deck

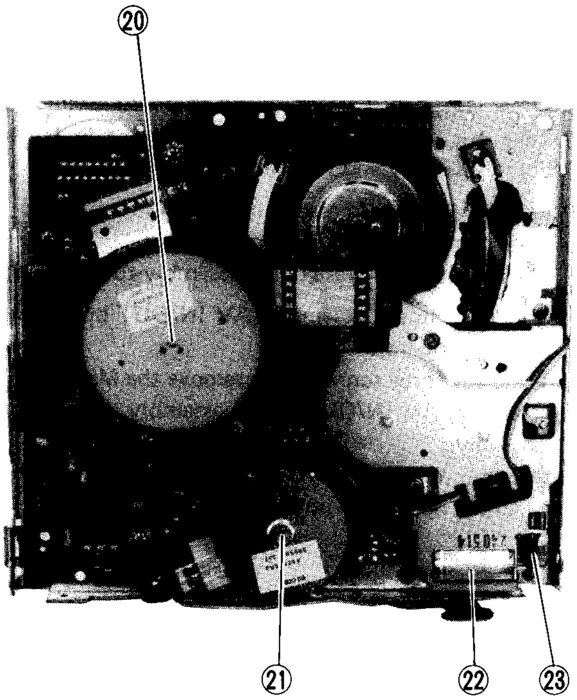


Fig. 1-1-3 Bottom view of main-deck

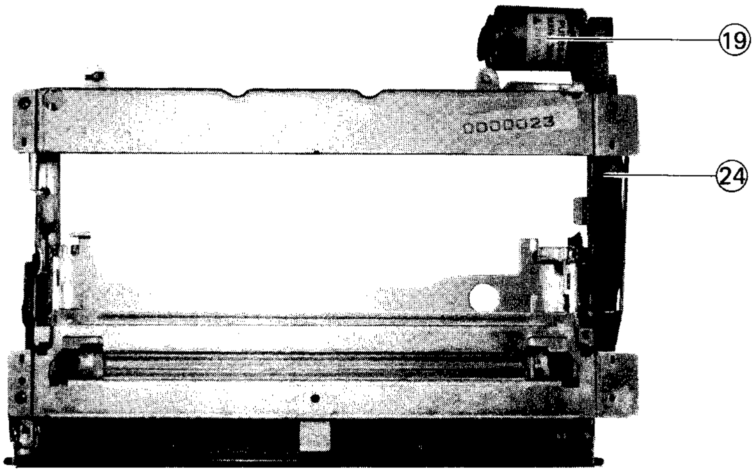
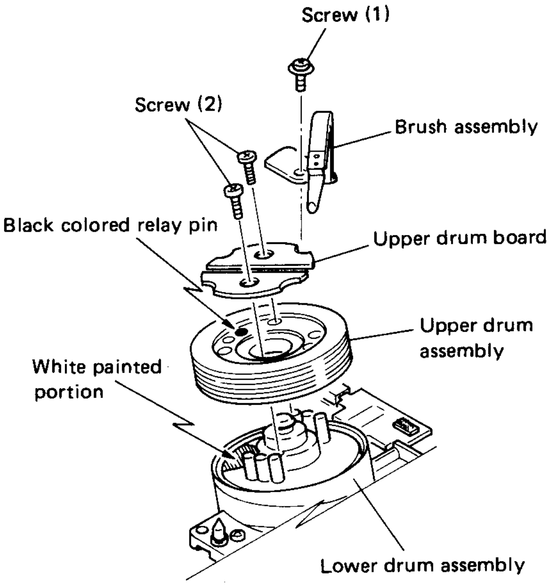
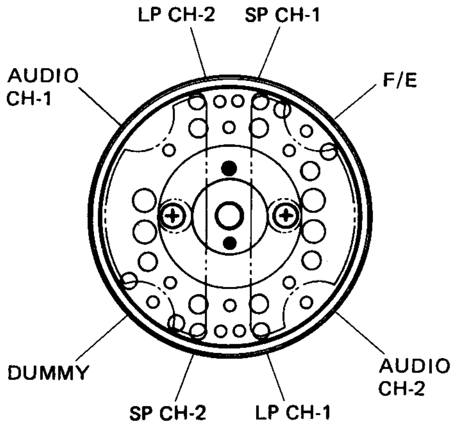
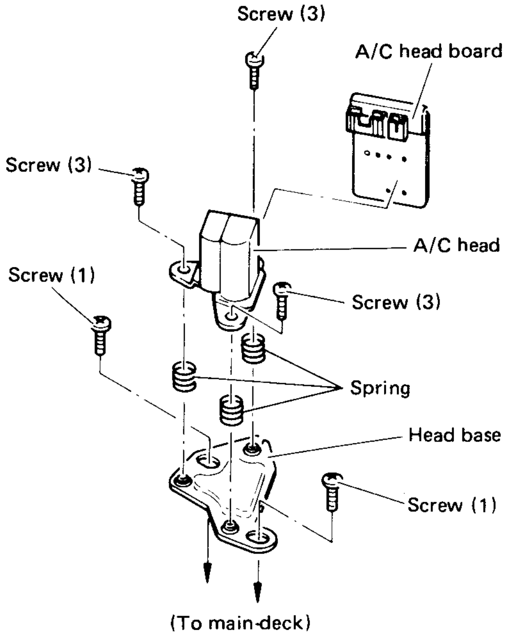
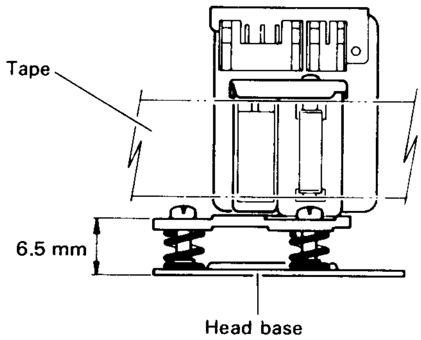


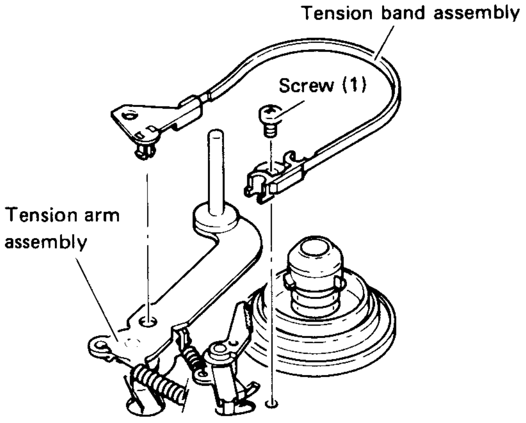
Fig. 1-1-4 Cassette housing

1. Supply guide roller
2. Supply slant pole
3. Tension pole
4. Upper drum
5. Take-up slant pole
6. Take-up guide roller
7. A/C head
8. Pinch roller
9. Take-up guide pole
10. Guide arm
11. Capstan
12. Take-up reel disk
13. Reel idler
14. Tension band
15. Supply reel disk
16. Lower drum
17. Impedance roller
18. Full erase head
19. Cassette motor
20. Capstan motor
21. Reel motor
22. Mode motor
23. Mode belt
24. Cassette belt
25. Roller
26. Half loading arm

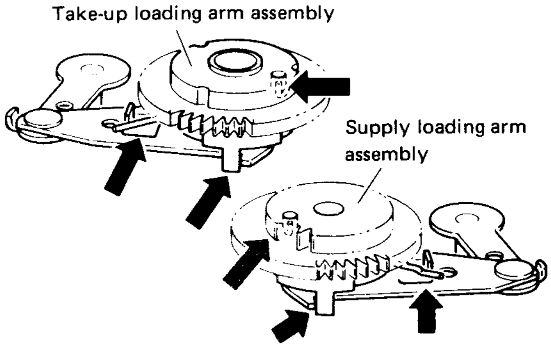
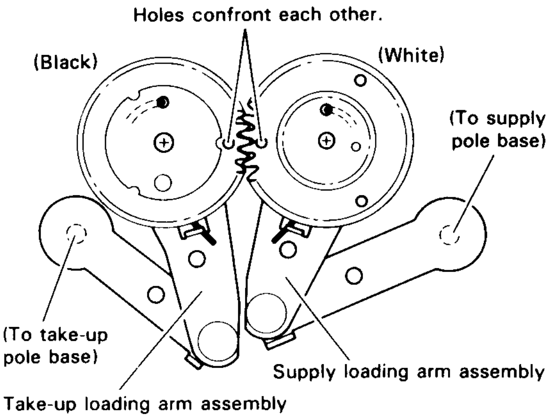
1.2 MAIN ASSEMBLY REPLACEMENT

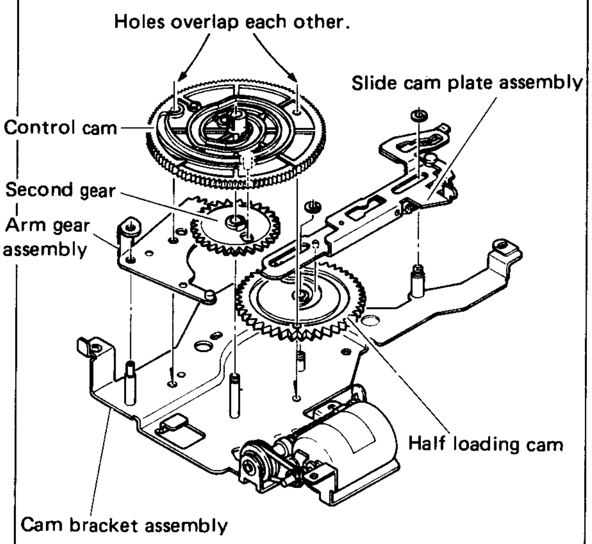
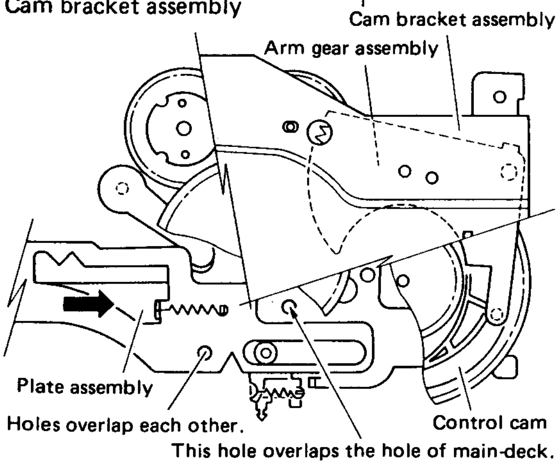
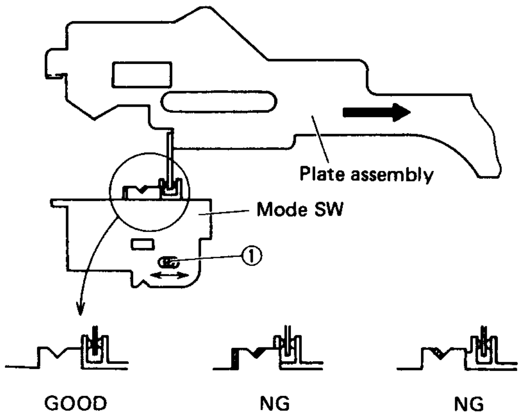
No.	Item	Adjustment parts	Operating mode	Description
1	Upper drum assembly			**Note:** When installing the new upper drum, use care not to touch the video heads. If heads are soiled, clean with a soft, finely woven cotton cloth or chamois that has been moistened in alcohol. Hold lightly against the heads and turn the drum clockwise. By no means clean with a vertical stroke.
	— Removal —  Screw (1) Screw (2) Brush assembly Black colored relay pin Upper drum board Upper drum assembly White painted portion Lower drum assembly **Fig. 1-2-1** Upper drum assembly			1) Refer to Fig. 1-2-1. Take out screw (1) and remove the brush assembly. 2) Use a desoldering tool or desoldering braid to unsolder the upper drum boards. 3) Take out two screws (2) and raise the upper drum to remove it together with the upper drum board. (If this drum is to be reinstalled, use care not to touch or damage the heads.)
	— Installation —  LP CH-2 SP CH-1 AUDIO CH-1 F/E DUMMY AUDIO CH-2 SP CH-2 LP CH-1			1) Refer to Fig. 1-2-1. Align the black relay pin of the new upper drum with the white marking of the lower drum. 2) Reinsert screws (2) and tighten them in a balanced manner. 3) Reinstall and solder the upper drum boards. 4) Clean the drum assemblies (see above note). 5) Reinstall the brush assembly and secure with screw (1).
	— Checks and adjustments —			After installing the upper drum, perform the following checks and adjustments (refer to appropriate Sections of this Manual). 1) FM waveform 2) Servo circuit 3) Video circuit 4) FM audio circuit

No.	Item	Adjustment parts	Operating mode	Description
2	A/C head (Audio/Control head)			
	— Removal —  Screw (3) A/C head board Screw (3) A/C head Screw (1) Screw (3) Spring Head base Screw (1) (To main-deck) **Fig. 1-2-2** A/C head			1) Disengage connectors attached to the A/C head board. 2) Take out two screws (1) and remove the A/C head together with the head base. 3) Unsolder and remove the A/C head board from the A/C head. 4) Take out screw (2) and remove the shield cap from the A/C head. 5) Take out three screws (3) and remove the A/C head from the head base. Use care regarding the three springs.
	— Installation —  Tape 6.5 mm Head base **Fig. 1-2-3** A/C head height			1) Install the A/C head by reversing the removal steps of above. 2) Temporarily set the A/C head height above the head base for 6.6 mm (see Fig. 1-2-3).
	— Checks and adjustments —			1) Use a spare tape (not Alignment tape) and confirm proper operation of the tape transport (see Section 1.5). 2) Perform interchangeability adjustment (see Section 1.6).

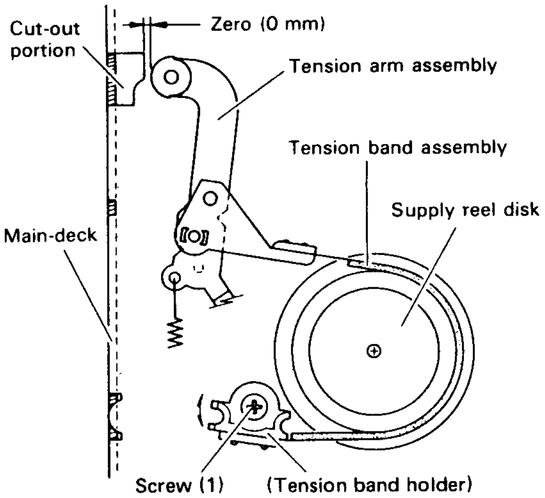
No.	Item	Adjustment parts	Operating mode	Description
3	Tension band assembly  Tension band assembly Screw (1) Tension arm assembly **Fig. 1-2-4** Tension band assembly			1) Take out screw (1) and disengage the tension band assembly from the tension arm assembly (see Fig. 1-2-4). 2) Remove and replace the tension band assembly. 3) Perform tension pole position adjustment (see Section 1.4).

1.3 ASSEMBLY PROCEDURE OF MECHANISM

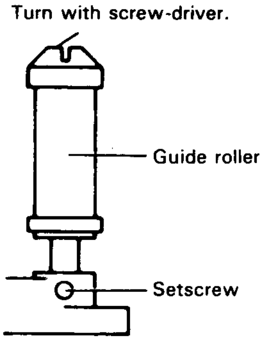
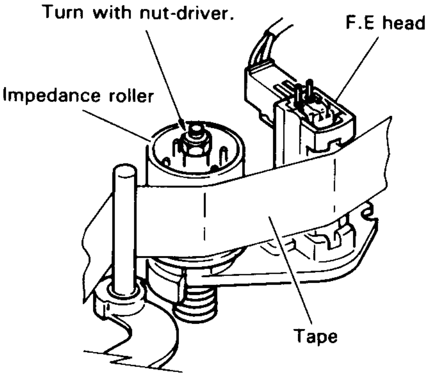
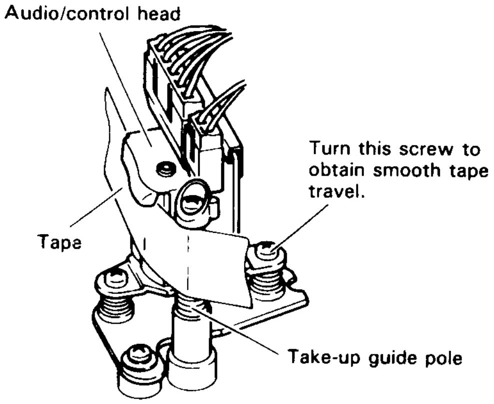
No.	Item	Adjustment parts	Operating mode	Description
	A close relationship exists between the mode select switch and the mechacon circuit. Therefore, the mode select switch and control arm engagement determines the overall mechanical operations of the levers, gears, rollers, etc. If these parts are not properly positioned, the video deck becomes stalled in the unloading or Stop mode.			
1	Loading arm assemblies  Take-up loading arm assembly Supply loading arm assembly **Fig. 1-3-1** Loading arm assembly (1)  Holes confront each other. (Black) (White) (To supply pole base) (To take-up pole base) Supply loading arm assembly Take-up loading arm assembly **Fig. 1-3-2** Loading arm assembly (2)			These assemblies are comprised of loading gears, torsion springs and loading arms. 1) Refer to Fig. 1-3-1 and install the loading arm assemblies correctly. 2) The take-up and supply loading arm positions with respect to the loading gear holes are indicated in Fig. 1-3-2. This configuration is important to allow shifting to the next operation.

No.	Item	Adjustment parts	Operating mode	Description
2	Control cam  Holes overlap each other. Slide cam plate assembly Control cam Second gear Arm gear assembly Half loading cam Cam bracket assembly **Fig. 1-3-3** Control cam			1) Install the half loading cam on the cam bracket assembly, then mount the slide cam plate assembly so that its stud sets into the groove on the half loading cam. 2) Install the arm gear assembly on the cam bracket assembly. 3) Assemble the second gear and the control cam so that the stud of the control cam sets into the hole of the second gear. 4) Mount the above assembly (control cam and second gear) on the cam bracket assembly to satisfy the relation indicated in figure. 5) Do not turn the control cam from this position for the next step.
3	Cam bracket assembly  Cam bracket assembly Arm gear assembly Plate assembly Holes overlap each other. Control cam This hole overlaps the hole of main-deck. **Fig. 1-3-4** Cam bracket assembly			1) Refer to Fig. 1-3-4 and press the plate assembly toward the right to overlap the indicated hole with that of the main deck. 2) Then install the cam bracket assembly. **Note:** If the arm and loading gears do not mesh properly, use a jeweler's screwdriver or similar tool to engage the gear teeth while installing the cam bracket assembly.
4	Mode switch position  Plate assembly Mode SW ① GOOD NG NG **Fig. 1-3-5** Mode switch			1) Engage the plate assembly and mode switch as shown in Fig. 1-3-5. Partially tighten screw (1) to where the switch can still be shifted for adjusting the position. 2) Press the plate assembly toward the right to where the holes are overlapped as in Fig. 1-3-4. Insert a jeweler's screwdriver into the holes to keep them aligned. 3) Shift the mode switch to align the V-notch as indicated in Fig. 1-3-5. Then tighten screw (1) to secure. 4) Remove the jeweler's screwdriver, then reinstall and solder the circuit board.

1.4 CONFIRMATION AND ADJUSTMENT

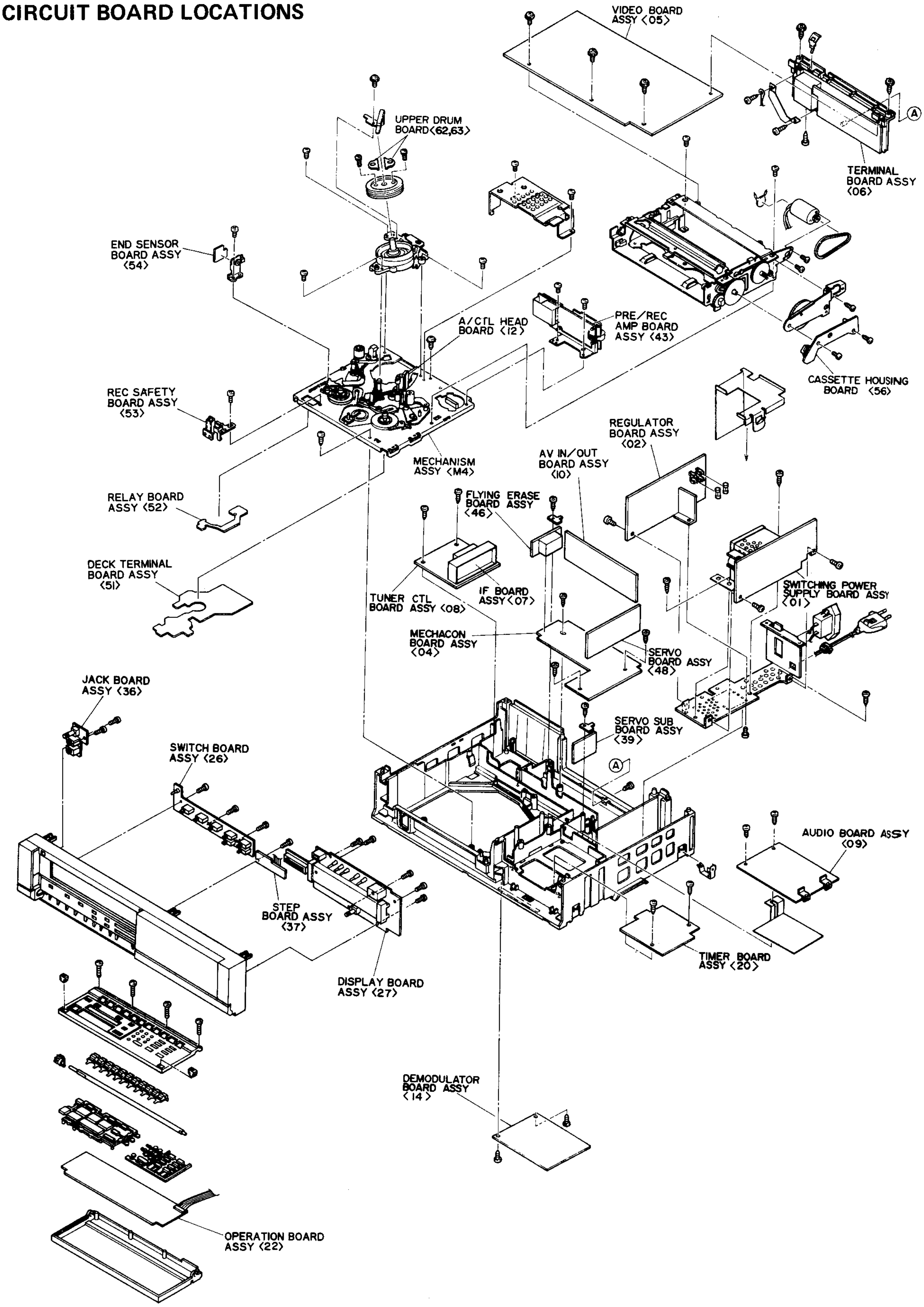
No.	Item	Adjustment parts	Operating mode	Description
1	Tension pole position  Cut-out portion Zero (0 mm) Tension arm assembly Tension band assembly Supply reel disk Main-deck Screw (1) (Tension band holder) **Fig. 1-4-1** Tension pole position			1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Refer to Fig. 1-4-1. Slightly loosen screw (1). Adjust the tension band holder position for 0 mm separation between the tension arm and cutout position. 3) Tighten screw (1) to secure the tension band holder. 4) Use the back tension cassette gauge and set for the Play mode. 5) Check for a scale reading between 25 and 45. 6) If outside this range, clean the tension band contacting portions of the supply reel disk with alcohol, or check the condition of the tension arm spring. If necessary, replace the tension band assembly.
2	Take-up torque			1) Without a cassette tape, set for the Play mode (see Section 1.1). 2) Set the torque gauge on the take-up reel disk. 3) Grasp the torque gauge lightly so that it rotates and read the value when the scale matches the indicator needle. Confirm a value between 45 and 155. 4) If outside this range, clean the rubber portion of the idler arm with alcohol, or if necessary, check the reel motor drive circuit.

1.5 TAPE TRANSPORT CHECKS AND ADJUSTMENT PREPARATIONS

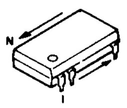
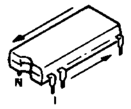
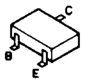
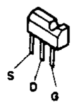
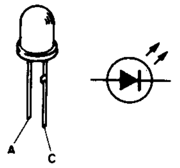
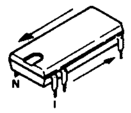
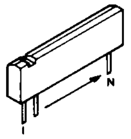
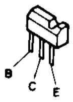
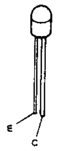
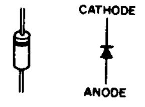
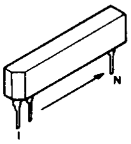
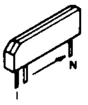
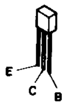
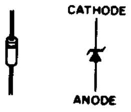
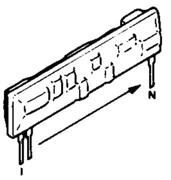
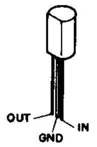
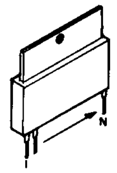
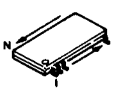
No.	Item	Adjustment parts	Operating mode	Description
	The tape transport system has been precision-adjusted at the factory and ordinarily does not require readjustment. However, adjustment may become necessary after long term usage or after replacing parts that affect the tape transport. The following steps mainly cover preparations for the interchangeability adjustments of Section 1.6.			
1	Guide roller  Turn with screw-driver. Guide roller Setscrew **Fig. 1-5-1** Guide roller			1) During interchangeability adjustments, the guide roller is turned with a flat-blade screwdriver to adjust its height and correct FM waveform linearity. Use a metric hex key (1.25 mm) to slightly loosen the setscrew at the base of the guide roller (see Fig. 1-5-1). Loosen the setscrew just sufficiently to allow the guide roller to be turned. If too loose, tape transport will be too unstable to permit correct adjustment.
2	Impedance roller  Turn with nut-driver. F.E head Impedance roller Tape **Fig. 1-5-2** Impedance roller			1) This compensates for tape running stability between the cassette and head drum. After adjusting the supply guide roller, the impedance roller height is adjusted for smooth tape transport at the lower flange. 2) Use a metric nutdriver (5.5 mm) to adjust by turning the upper nut (see Fig. 1-5-2). However, note that excess turning can disturb the FM waveform stability.
3	A/C head (audio/control head)  Audio/control head Turn this screw to obtain smooth tape travel. Tape Take-up guide pole **Fig. 1-5-3** A/C head			1) After adjusting the take-up guide roller, adjust the A/C head inclination for smooth tape travel at the lower flange of the take-up guide pole. Refer to Fig. 1-5-3.

SECTION 3
CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD LOCATIONS


VIDEO BOARD ASSY ⟨05⟩
UPPER DRUM BOARD⟨62,63⟩
TERMINAL BOARD ASSY ⟨06⟩
Ⓐ
END SENSOR BOARD ASSY ⟨54⟩
A/CTL HEAD BOARD ⟨12⟩
PRE/REC AMP BOARD ASSY ⟨43⟩
CASSETTE HOUSING BOARD ⟨56⟩
REC SAFETY BOARD ASSY ⟨53⟩
REGULATOR BOARD ASSY ⟨02⟩
MECHANISM ASSY ⟨M4⟩
AV IN/OUT BOARD ASSY ⟨10⟩
RELAY BOARD ASSY ⟨52⟩
FLYING ERASE BOARD ASSY ⟨46⟩
DECK TERMINAL BOARD ASSY ⟨51⟩
IF BOARD ASSY⟨07⟩
TUNER CTL BOARD ASSY ⟨08⟩
SWITCHING POWER SUPPLY BOARD ASSY ⟨01⟩
MECHACON BOARD ASSY ⟨04⟩
SERVO BOARD ASSY ⟨48⟩
JACK BOARD ASSY ⟨36⟩
SERVO SUB BOARD ASSY ⟨39⟩
Ⓐ
SWITCH BOARD ASSY ⟨26⟩
AUDIO BOARD ASSY ⟨09⟩
STEP BOARD ASSY ⟨37⟩
TIMER BOARD ASSY ⟨20⟩
DISPLAY BOARD ASSY ⟨27⟩
DEMODULATOR BOARD ASSY ⟨14⟩
OPERATION BOARD ASSY ⟨22⟩

3.2 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS

	Integrated Circuit		Transistor		Diode
	A	**B**	**C**	**D**	**E**
1					
2					
3					
4					
5					

NAME		L
IC		
A	AN6041	3A
B	BA10324	2A
	BA716LS	2B
	BU3791	2A
H	HZ118070	1A
	HD49722NT	1A
M	MC7805ACT	5A
	MSC1148BRS	2A
	MSM16811RS	1A
	M50445-398SP	1B
	M50938-625SP	2A
	M51288SP	1A
	M52055P	2A
N	NJM2233AD	1A
	NJM2234D	1A
	NJM2234S	3B
	NJM2243S	3B
P	PB20167A-01	4A
	PB20285A	4A
	PB20286A-01	4A
	PB20287A-02	4A
	PB20289A-02	4A
	PB20290A-02	4A
	PB20291A	4A
	PB20298A	4A

NAME		L
S	SDA5642	2A
	STR-D1706	5A
	S-8053HNB	4B
T	TA8405S	3B
	TA8609P	1B
	TA8733F	5B
	TC4052BP	1B
	TC74HC04AP	1A
	TC74HC4066P	1B
U	UPD75216ACW-188	1B
V	VC2063S	2A
TRANSISTOR		
DTC	DTC124EK	1C
P	PN268R-NC	2D
U	UN4319VI	3C
2SA	2SA1036K	1C
2SC	2SC1740	3C
	2SC2647	2C
	2SC3311A	3C
	2SC3313CTA	3C

NAME		L
2SD	2SD639R	2C
2SK	2SK658	1D
DIODE		
H	HZ12A2	3E
	HZ6BITE	3E
M	MTZJ4.7C	3E
O	OA90UF	2E
R	RD16ES-T1B2	3E
	RD20ES-T1B2	3E
S	SLR-55VC3F	1E
1	10E6-F2	2E

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	● Is the TV receiver set to the correct mode? See pages 39 and 40.
Noise appears during playback.	● Press SPURLAGE buttons.
Playback picture is blurred or interrupted while TV broadcasts are clear.	● Video heads may be dirty. – Head cleaning is necessary. Consult your JVC dealer.

HI-FI AUDIO PROBLEMS

Symptoms	Check points
TV sound cannot be recorded on hi-fi audio track.	● Has the SIMUL button been pressed? – Press it again so "SIM" no longer appears on the FDP.
Breaks are noticeable in hi-fi audio reproduction.	● Press the SPURLAGE buttons. (See page 46.) ● Have you adjusted the recording level correctly? – Over-level recordings could be a cause. Adjust the level correctly next time. See page 46.
Soundtrack on the hi-fi audio track cannot be reproduced.	● Is the NORM indicator on the FDP lit? – Press the AUDIO MIX button for L and R to light as required.
Audio level indicators do not function.	● Is the PEGELANZEIGE switch set to a position other than EIN? – Set it to EIN.

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV.	● Move camera or microphone away from TV or reduce TV sound volume.
Some channels are skipped over when selecting a channel.	● Those channels are preset to be skipped over. If you need them, restore them. (See page 44.)
Channel cannot be switched.	● Is recording in progress? – Press PAUSE/STANDB., select a desired channel and press WIEDERGABE/X2.

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and swtich on. Take out the cassette. After checking the cassette, operate the unit as usual.

HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV programme received is clear. This does not mean that the recorded programme has been erased.
- Dirt accumulated on the video heads after long periods of use causes such problems. In this case, head cleaning requiring highly technical care is necessary.

For head cleaning, conslult the your JVC dealer.

SPECIFICATIONS

Format : S-VHS/VHS PAL standard with Hi-Fi audio
Video recording system : Rotary two-head helical scan system with slant double-azimuth combination video heads
Hi-Fi audio recording system : Deep-layer recording system conforming to stereo Hi-Fi VHS standard
No. of audio channels : 2 Hi-Fi audio channels
1 normal audio channel
Video signal system : PAL colour and separated Y/C signals, 625 lines
Tape width : 12.65 mm
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Maximum recording time (SP) : 240 min. with E-240 video cassette
(LP) : 480 min. with E-240 video cassette
Temperature
Operating : 5°C to 40°C
Storage : -20°C to 60°C
Humidity
Operating : 5 % to 80 %
Storage : 35 % to 80 %
Power requirement : 220 V∿, 50/60 Hz
Power consumption : 44 W

Video
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB
(Rohde & Schwarz noise meter)
with BILDSCHÄRFE control at centre position
Horizontal resolution : More than 400 lines (S-VHS)/ 250 lines (VHS) with BILDSCHÄRFE control at centre position

Audio
Input : Mic: -67 dBs, high impedance, unbalanced
AUDIO EING. connector (RCA x 2): -8 dBs, 50 k-ohms, unbalanced
A/V1 EING./AUSG. and A/V2 EING. socket (21-pin Peri connector): -3.8 dBs (CENELEC standard), 10 k-ohms, unbalanced
Output level : A/V1 EING./AUSG. socket (21-pin Peri connector): -3.8 dBs (CENELEC standard), high impedance load
AUDIO AUSG. connector (RCA x 2): -6 dBs, high impedance load
Output impedance : Less than 1 k-ohm, unbalanced
Signal-to-noise ratio : More than 40 dB
Frequency range : 70 Hz to 10,000 Hz

Hi-Fi audio
Frequency response : 20 Hz – 20,000 Hz
Dynamic range : More than 90 dB
Wow and flutter : Less than 0.005 % WRMS

TV tuner/RF section
Channel storage capacity : 48 channels
Aerial input : VHF 47 – 89 MHz
104 – 300 MHz
302 – 470 MHz
UHF 470 – 862 MHz
Aerial output : UHF channels 32 – 40 (Adjustable)

Digital clock/timer
Clock display : 24-hour fluorescent digital display with day and date indication
Reference frequency : Quartz controlled
Start time setting : Within one year
Programming capacity : 8 programmes

Dimensions : 435 mm(W) x 105 mm(H) x 380 mm(D)
Weight : 7.4 kg
Provided accessories : Aerial cable,
Infrared remote control,
"R6"-size battery x 2,
Audio cable (RCA-RCA)
S-Video cable (4-pin/4-pin)
Cassette tape (SE-180)
VPV adapter
Optional accessory : RGB signal converter KM-V7EG

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

INSERT EDITING

Insert editing means recording a new scene into a section of pre-recorded tape so that a part of the original recording can be replaced with a new sequence without excessive picture distortion at edit-in and edit-out points. Thanks to the flying erase head, clean edits can be obtained. New video and audio signals to be inserted can come either from another video cassette recorder or the built-in tuner.

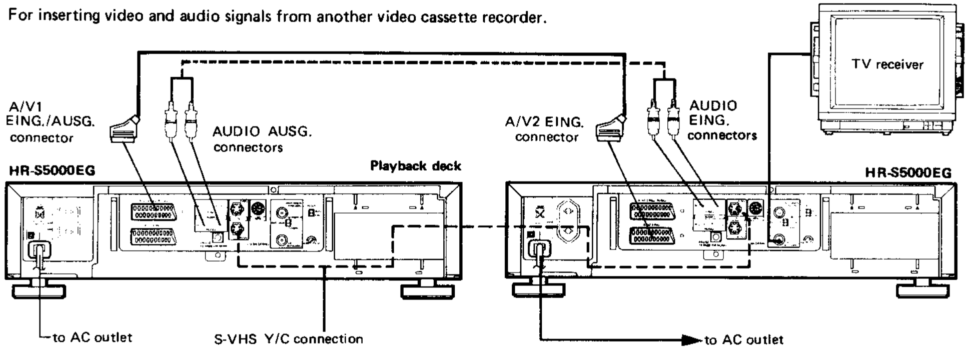
CAUTION
Since video and audio signals are recorded simultaneously, both are replaced with new recordings simultaneously. However, the normal audio soundtrack remains unchanged.

Setting options of the relevant controls

Settings Source	EINGANGS-WAHL switch and SIMUL button
To insert programmes from a different tape	AV2 or S (with S-VHS ㉕ set as required) (See page 36)
To insert TV programmes from the built-in tuner	Select a channel (SIMUL button pressed to OFF)
To insert FM simulcast programmes	SIMUL (button pressed to ON)

Connection

For inserting video and audio signals from another video cassette recorder.



Procedure

1 Switch on the TV receiver.
- Set the TV receiver as required.

2 Load a pre-recorded cassette.

3 Set the EINGANGS-WAHL switch and press the SIMUL and S-VHS buttons as required. (See chart above.)

4 Set the Hi-Fi audio recording level. (See page 46.)

5 Play back the tape to determine the edit-out point (the end of the tape section to be replaced).

6 Press the PAUSE/STANDB. button ㊽ at the edit-out point.

7 Press the ZÄHLWERK-RÜCKST. button ㊿ .
- The counter will be reset to "0St 00m 00s".

8 Press the RÜCKLAUF button (60) to determine the edit-in point (the beginning of the tape section to be replaced).

9 Press the PAUSE/STANDB. button ㊽ at the edit-in point.

10 Press the INSERT button ㊺ .
- This engages the Insert Standby mode in which the input signal can be monitored on the TV screen; the still picture changes into the input signal that you are going to record.
- The input sound signal can also be monitored.

11 Operate the source equipment properly.
- Play back on another recorder the tape programme to be inserted.
- Select the channel to be recorded.
- Select the channel and set the FM tuner.

12 Press the WIEDERGABE/X2 button ㊾ to start insert editing.
- Now video and audio signals will be recorded simultaneously.
- At the counter reading of "0St 00m 00s", recording will stop automatically.
- The tape will continue running in the Play mode.

Notes:
- Do not use the STOP button (52) to stop insert editing. If you press the STOP button, the tape stops and the Insert Edit mode is cancelled.
- If you wish to stop insert editing before the specified edit-out point is reached, press the ZÄHLWERK-RÜCKST. button. Then the Play mode will be entered.
- Insert editing is also possible without determining the edit-out point. Simply start insert editing at the edit-in point and, where you wish to stop insert editing, press the PAUSE/STANDB. button. Since this recorder incorporates a flying erase head, even this simplified procedure makes clean edits, though there may be a slight discrepancy between the actual and intended edit points.
- The recording mode (SP or LP) is automatically determined by the previous recording on which the new segment is inserted regardless of the setting of the SP/LP button ㉛ .
- If the edit-in point of the new scene lies in the SP mode and the edit-out point of the same scene lies in the LP mode or vice versa, the inserted picture will distort at the switching point in the Recording mode.
- If there is a non-recorded section on the tape, the Insert Edit mode will be cancelled automatically and the Play mode will be engaged.
- Insert editing is not possible with non-recorded cassettes or cassettes whose safety tab has been removed.

RECORDING FROM AN EXTERNAL SOURCE

By connecting an external video source (such as a VideoMovie camera-recorder, 2nd video recorder, video camera, etc.) to the A/V2 EING. socket (83) , recording and/or editing are possible. possible.
- For connection of these units, an appropriate cable is necessary.
- For connection of a video camera, a camera adapter is also necessary. Connect the camera adapter's PAUSE terminal to the recorder's PAUSE FERNBEDIENUNG connector (95) , then you can control taping start/stop with the camera's start/stop switch. For proper connection of a camera, consult a JVC dealer.

1 Turn the power on for all connected equipment.

2 Set the TV receiver as required.

3 Load a cassette.

4 Press either KANAL (∨ / ∧) button ㊱ or the numeric key 0/AV ㊸ to obtain "AU" in the channel display.

5 Set EINGANGS.-WAHL ⑰ to AV2.

6 Press SP/LP ㉛ for required mode.

7 Operate the source equipment properly.

8 Press AUFN./DA ㊺ .
- When recording with a camera, press AUFN./DA and PAUSE/STANDB. to enter the Recording Standby mode, then control taping start/stop with the camera's start/stop switch.

9 To stop recording temporarily, press PAUSE/STANDB. ㊽ .

10 To end recording, press STOP (52) .

Note:
- For the operation of the source equipment, refer to the instruction manual of the relevant machine.

Recording from other S-VHS equipment

For recording sources which deliver separated Y/C signals, use the S EING. connector (85) or the A/V2 EING. peri-connector (83) , and proceed as follows:

(1) Insert an S-VHS cassette.
(2) Switch to the S-VHS mode (by pressing the S-VHS button ㉕).
(3) Select the AUX mode (by pressing the numeric key "0").
(4) Set the EINGANGS-WAHL switch ⑰ as required.
S : To record from the S EING. connector.
AV2 : To record from A/V2 EING. peri-connector.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

POWER AND TAPE TRANSPORT PROBLEMS

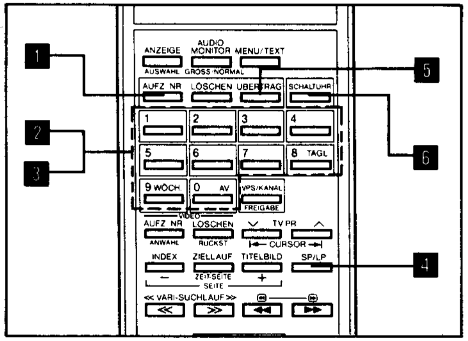
Symptoms	Check points
No power is applied to the recorder.	• Is the power cord disconnected? – Connect it.
Clock is functioning properly, but the recorder cannot be powered	• Is the TIMER indicator lit on the FDP? – Press SCHALTUHR to disengage the Timer Recording Standby mode.
Tape does not run during recording.	• Is the PAUSE/STANDB. button engaged? – Press the WIEDERGABE/X2 button.
Tape stops in the Rewind or Fast-Forward mode.	• Has the ZÄHLWERK-SPEICHER button been pressed? – Press it so S no longer appears on the FDP.
Tape will not rewind or fast forward.	• Is the tape already fully rewound or fast forwarded? – Check the cassette.

RECORDING PROBLEMS

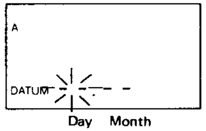
Symptoms	Check points
Recording cannot be started.	• Is a cassete loaded? • Is the safety tab on the cassette removed? – Reseal the slot with cellophane tape.
Camera recording is not possible.	• Are the camera and the camera adapter correctly connected? • Is the power switch of the camera adapter set to ON? • Does the channel display indicate "AU"? – Press "0/AV".
Simulcast recording is not possible.	• Has the SIMUL button been pressed? – Press it so "SIM" appears on the FDP. • Is an audio source correctly connected to the AUDIO EING. connectors? – Check connections.
Timer recording is not possible.	• Have you set the clock correctly and programmed the timer correctly? – Check once again. • Is the TIMER indicator lit on the FDP? – Press SCHALTUHR.

C. Independent Remote Programming

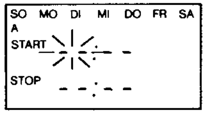
- ●The remote control incorporates 4 programme memories (A, B, C and D).
- ●The programmed data is held in memory even after it has been transferred to the recorder.



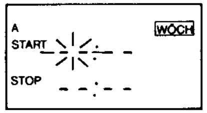
1 Press AUFZ. NR. ● .
- ●The LCD will be activated for programme memory "A".
- ●To advance to programmes B to D, press again.



2 Enter the date using numeric keys ● .
- ●Setting for a daily or weekly serial is the same as described in "A. Local Programming".

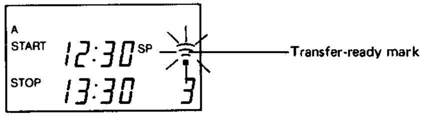


For daily serial setting



For weekly serial setting

3 When the display changes to the next stage, enter the start time, stop time and channel in succession.
- ●For programming the timer to record an external source, press the numeric key "0" while the channel is blinking; "0" will appear on the LCD and when transferred in step ■ , "AU" will appear in the channel display section on the FDP.
- ●After the channel has been entered, the transfer-ready mark will appear and blink.



- ●When not using the VPS recording system, press VPS/KANAL to make "VPS" disappear.

4 Press SP/LP ● to obtain the desired recording mode indication on the display.
- ●The SP or LP entry can be made anytime while in the Timer Set mode.

5 Direct the remote control to the recorder's Remote Sensor window ● and press ÜBERTRAG ● .
- ●*The programmed data will be loaded in one of the* recorder's memories (1 – 8), the vacant one of the smallest programme number.
- ●If all programme memories are full, the recorder's clock will blink and transference will not take place.
- ●Call up the programme(s) to be cancelled by pressing VIDEO AUFZ. NR. ● , then press VIDEO LÖSCHEN ● to cancel it. Data transfer can now be made by pressing ÜBERTRAG again.

6 Press SCHALTUHR ● .
- ●Check to see that the TIMER indicator and other items on the recorder's FDP respond correctly. (See page 57.)

Setting the date, start and stop times, and channel

- ●It is not possible to set the date, start and stop times unless the date and clock have previously been set.
- ●Enter the date while the digits are blinking.
- ●Unless the start time has been properly set, stop time setting is not possible.
- ●The stop time can be set within 24 hours from the start time.
- ●Non-applicable numbers (such as January 32, February 30 for dates, 24 or larger for hours, 60 or larger for minutes and 49 or larger for channels) will be rejected when keyed in.

Cancelling the preset data

- ●The preset programmes can be cancelled. First engage the Timer Set mode for the programme number you wish to cancel and then press the LÖSCHEN/ÜBERSPRINGEN button ● or VIDEO LÖSCHEN ● . Or for the remote control's memory, press LÖSCHEN ● .
- ●Unless the VPS mode is engaged, an executed programme is automatically cleared.

Checking the programmed data

- ●Checking and re-programming can be performed anytime, even when the SCHALTUHR button has already been engaged.
- ●While recording is actually taking place according to one preset programme, all other preset programmes can be checked or re-programmed.
- ●To disengage the Timer Set mode, press the ANZEIGE button ● (on the recorder) or the ANZEIGE button ● (on the remote control).

Timer recording operation

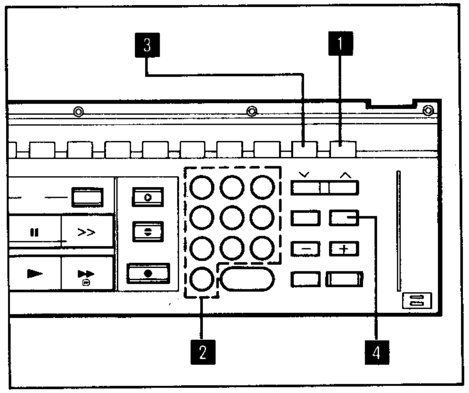
- ●When the preset start time is reached, recording starts.
- ●After timer recording, the power is switched off. If the tape end is reached during timer recording, the cassette is automatically ejected and the power is switched off.

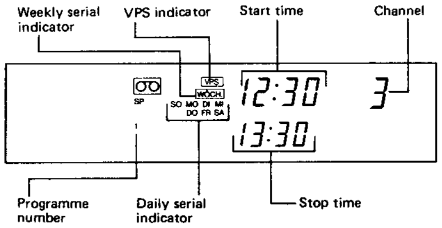
How to use the cursor keys ● ●

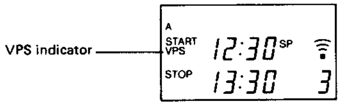
- ●If you press a wrong key and the flashing position has advanced, press ZURÜCK to return to the previous position for correction.
- ●Once all data have been programmed, you can reach any position for correction using ZURÜCK or VOR. The flashing position is ready for re-entry.
- ●Pressing AUFZ. NR. on the recorder or VIDEO AUFZ. NR. on the remote control engages the FDP in the check mode in which no position flashes and data correction is not possible. Pressing AUFZ. NR. on the remote control engages the LCD in the transfer-ready mode in which the transfer-ready mark is flashing and data correction is not possible. For correction of data, press either cursor key to move to the position which requires correction.

VPS RECORDING

In the VPS (Video Programme System) system, TV stations transmit different VPS codes for different TV programmes, which control the starting and stopping of the video recorder and have precedence over times preset in the timer for accurate recording of a particular programme from start to finish.







1 Press AUFZ.NR. ● (or VIDEO AUFZ. NR. ●) or, for the remote control's memory ● .

2 Set the date, start time, stop time and channel in the same way as for timer programming.

3 Press KANAL/VPS ● or VPS/KANAL ● .
- ●All timer data will be converted to VPS codes and stored in memory.

4 Press SCHALTUHR ● , or ●
- ●The recorder will enter the VPS standby mode at 20:00 on the day previous to the preset day and remain engaged until 3.59 on the following day, if the intended programme has not yet been broadcast.
- ●When a VPS code corresponding to the intended TV programme is detected during the VPS standby mode recording will start. When the VPS code changes to another, recording will stop.
- ●When an interruption code is detected during VPS recording, the VPS standby mode is engaged and recording restarts when the regular VPS code is restored.

Notes:

- ●When not using the VPS recording system, press KANAL/VPS ● to make "VPS" disappear on the FDP.
- ●Operation at the end of VPS recording is the same as with ordinary timer recording.

NEXT-FUNCTION MEMORY

Memory Play function

- If you want to watch the tape from its beginning after rewinding, press the RÜCKLAUF button and then WIEDERGABE/X2 within 2 seconds. Playback will start automatically at the beginning of the tape. (Check to see that the counter memory indicator [S] is off.)
  If you want to watch the tape from the counter reading of "0St 00m 00s" press the ZÄHLWERK-SPEICHER button to obtain [S]. Then, press the RÜCKLAUF (or VORLAUF) button and then WIEDERGABE/X2.
- While the tape is being rewound, the indicator (PLAY) is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (STOP, WIEDERGABE/X2, VORLAUF, RÜCKLAUF).

Memory Eject/Power-Off/Timer Standby

If you are going to eject the cassette, turn the power off or engage the timer Standby mode after rewinding the tape, you do not have to wait for completion of rewind to press the corresponding button.

- To eject the cassette after rewind, press RÜCKLAUF and then KASSETTE within 2 seconds. (To cancel the Memory Eject mode, press STOP.)
- To turn the power off after rewind, press RÜCKLAUF and then BETRIEB within 2 seconds. (To cancel the Memory Power-off mode, press BETRIEB.)
- To engage the Timer Standby mode after rewind, press RÜCKLAUF and then SCHALTUHR within 2 seconds. (To cancel the Memory Timer Standby mode, press SCHALTUHR.)

Memory Play	RÜCKLAUF/ VORLAUF	→	WIEDERG./X2		Blinking	→	Play mode
Memory Eject	RÜCKLAUF	→	KASSETTE		Blinking	→	Cassette ejected
Memory Power-off	RÜCKLAUF	→	BETRIEB	○	Blinking	→	Power off
Memory Timer Standby	RÜCKLAUF	→	SCHALTUHR	TIMER	Lights	→	Timer standby mode

within 2 seconds

AUDIO DUBBING

Audio dubbing means recording a new soundtrack on a pre-recorded tape. In other words, the previously recorded sound is erased and replaced with a new soundtrack. **Audio dubbing is applicable only to the longitudinal audio track (normal audio).** Therefore, a dubbed narration can be heard together with the original hi-fi sound.

1. Switch on the TV receiver and set it as required. (See pages 39 and 40.)
2. Load a pre-recorded cassette. Power will be switched on automatically.
3. Connect a microphone or an audio source to the MIKROFON jack ● or the A/V2 EING. socket (84) respectively.
   - With both microphone and audio source connected, mixed sound is recorded.
4. Press "0" of the numeric keys ㊸ , and set the EINGANGSWAHL switch to AV2.
   - If you record sound only from the microphone, the source equipment connected to the A/V2 EING. socket should be off.
5. Press WIEDERGABE/X2 ㊾ to start playback and then press RÜCKLAUF or VORLAUF ● or ㊼ to search for the point from which you wish to start audio dubbing.
6. Press PAUSE/STANDB. ㊽ at the start-point of audio dubbing.
7. Press VERTONUNG ㊹ .
8. Press WIEDERGABE/X2.
   - Audio dubbing will start.

Notes:

- It is recommended that you use a lower-impedance microphone.
- If whistling or howling is heard during audio dubbing, reduce the TV volume or move the microphone farther away from the TV. Recording is being performed even if sound is not heard from the TV receiver. If you want to monitor the sound being recorded, connect headphones to the KOPFHÖRER jack.
- When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position.

CAUTION:
Audio dubbing is not possible with an audio source connected to the rear panel AUDIO EING. connectors.

ENGLISH

ENGLISH

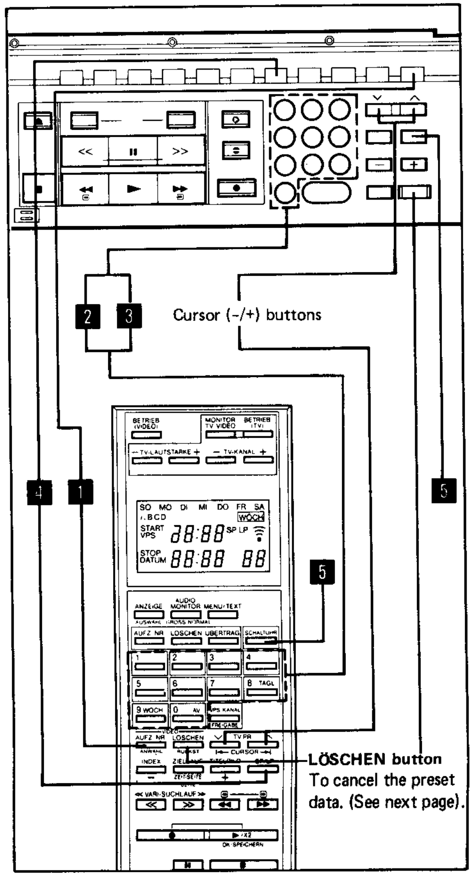
AUTOMATIC TIMER RECORDING

First of all, load a cassette (with safety tab in place); power will be switched on automatically.

Three ways to perform timer programming

A. **Local programming**: Programme the timer using the recorder's controls while referring to the recorder's FDP.
B. **Direct remote programming**: Programme the timer using the remote control's keys while referring to the recorder's FDP.
C. **Independent remote programming**: Programme the remote control's memory using the remote control's keys while referring to its own LCD and then transfer the data to the recorder.

Note:
The timer can also be programmed by using the Teletext function. Refer to the "Handy Teletext & VPV Operation Guide" accompanying this instruction manaul for Teletext timer programming.

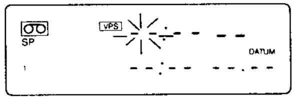


Cursor (-/+) buttons

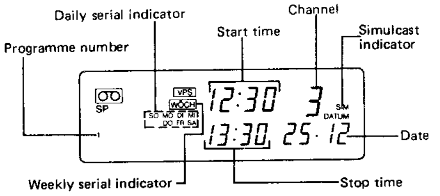
LÖSCHEN button
To cancel the preset data. (See next page).

A. Local Programming

1. Press AUFZ. NR. ㉟ .
   - The display will change to the Timer Set mode for programme number "1". To advance to programme numbers 2 – 8, press AUFZ. NR.



2. Enter the start time using numeric keys ㊸ .
   - Invalid numbers will be rejected.
   - To key in a one-digit number of hours or minutes, first press "0". Then press the relevant numeric key.
3. When the display changes to the next stage, key in the stop time, date and channel in succession using numeric keys.
   - To record a daily serial starting on the day of setting, press VOR " ^ " ㊱ without entering any date figure.
   - To record a daily serial starting on a certain day, press [8] and enter the date.
   - To record a weekly serial, press [9] and enter the date.
   - For keying in channel numbers, refer to page 43.
   - For programming the timer to record an external source, press the numeric key "0" while the channel display is blinking; "AU" will appear on the FDP.
   - For programming the timer to record an FM simulcast programme, press the SIMUL button on the recorder at any stage while programming; "SIM" will appear on the FDP.



   - When not using the VPS recording system, press KANAL/VPS ㉝ to make "VPS" disappear on the FDP.
4. Press SP/LP ㉛ to obtain the desired recording mode indication on the display.
   - The SP or LP entry can be made anytime while in the Timer Set mode.
5. After making sure that the cassette is loaded, press SCHALTUHR ㊳ .
   - The Timer Recording Standby mode will be engaged with the TIMER indicator and the preset programme number(s) illuminated and the power turned off.
   - With no cassette loaded, the TIMER and "cassette loaded" indicators will continue blinking.
   - A cassette whose safety tab has been removed will be ejected automatically.
   - If a preset programme contains errors, that programme number will not be illuminated. Recheck the programmed data.

B. Direct Remote Programming

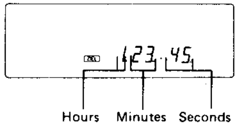
Following the procedures above, use the remote control's buttons instead of the recorder's with the remote control directed toward the recorder's Remote Sensor window ● .

REALTIME TAPE COUNTER FUNCTIONS

Unlike usual tape counters which show tape locations in numbers, this realtime tape counter shows tape time precisely in hours, minutes and seconds in all modes (Record, Play, Rewind, Fast Forward).

Time Go-to function

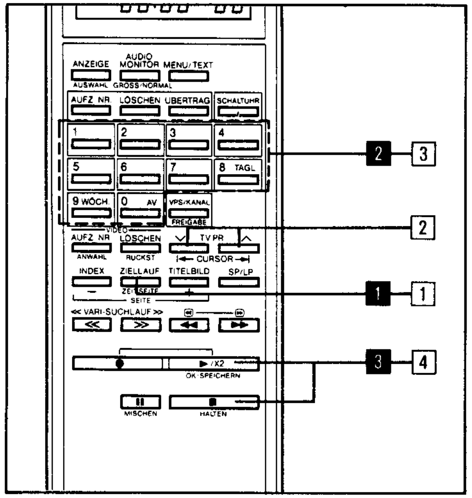
The Time Go-To function gives you direct access to any point on the tape by simply specifying the time from the beginning of the tape.


1:23.45
Hours
Minutes
Seconds

1 Press ZIELLAUF (75) while in the Play, Stop or Still mode.
- The counter will change to the Go-To mode.

2 Specify the time (from the beginning of the tape) to the point to be located, by using the numeric keys (67) .
- Always key in a full number.

3 Press (▶ /X2) (79) or (■) (80) .
- Depending on the situation, search will take place either in the Shuttle Search mode or in the Rewind or Fast Forward mode which is much faster than the Shuttle Search mode. After the specified point is reached, playback starts automatically or the tape stops automatically depending on the command.


ANZEIGE
AUDIO MONITOR
MENU/TEXT
AUSWAHL
GROSS/NORMAL
AUFZ NR
LÖSCHEN
ÜBERTRAG
SCHALTUHR
1
2
3
4
5
6
7
8 TAGL
9 WÖCH
0
AV
VPS/KANAL
FREIGABE
VIDEO
TV PR
ANWAHL
RÜCKST
CURSOR
INDEX
ZIELLAUF
TITELBILD
SP/LP
ZEIT/SEITE
SEITE
VARI-SUCHLAUF
▶/X2
OK/SPEICHERN
MISCHEN
HALTEN
2
3
2
1
1
3
4

Pressing ▶ /X2 from Play or Still mode:	Shuttle Search→Automatic start of playback
Pressing ▶ /X2 from Stop mode:	REW or FF→Automatic start of playback
Pressing ■ from Play, Still or Stop mode:	REW or FF→Automatic stop

- If the recorder did not detect the leader tape when the cassette was loaded (indicated by "-St--m--s" when the Go-To button is pressed), the tape is first rewound to the beginning of the tape and then is fast-forwarded to the specified point.

Time Search function

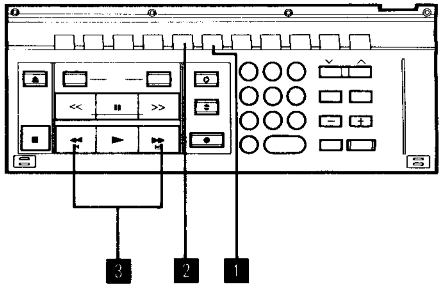
The Time Search function lets you locate a point on the tape a specified time span away from the current position in either direction.

[1] Press ZIELLAUF (75) while in the Play, Stop or Still mode.
[2] Press TV PR. "∨" or "∧" (68) to specify the direction of search.
[3] Specify the time (from the current position) to the point to be located, by using the numeric keys (67) .
[4] Press (▶ /X2) or (■).

- The tape will move to the specified point and automatically start playback or stop.

Notes:
- Each step in the operation procedure must be followed by the next within 60 seconds, otherwise the Go-To or Search mode will be cancelled.
- If the GO-TO button is pressed while in the Play or Still mode, a still picture can be obtained when the specified point is reached, if you press the (▮▮) button instead of the (▶) or (■) button after keying in the time.
- Use of other control buttons, while in either the Time Go-To or Search mode, cancels that mode.
- If the specified time exceeds the tape length, the tape fast forwards to the end and then rewinds to the beginning and stops.

COUNTER MEMORY FUNCTION/LAP TIME INDICATION



Counter Memory function

1 Press ZÄHLWERK-RÜCKST. ㊴ at a point which you may wish to locate later.
- The counter will read "0St 00m 00s".

2 Press ZÄHLWERK-SPEICHER ㉙ . [S] will appear on the FDP.

3 Press RÜCKLAUF (or VORLAUF) ㊿ (or ㊼) when you need to return to the designated point.
The tape will rewind (or fast forward) and stop at about the "0St 00m 00s" counter reading automatically.

Lap Time Indication

When you need to know the exact time of a recording, press the ZÄHLWERK-RÜCKST. button before starting recording or playback. The counter will be reset to "0St 00m 00s" and show the exact elapsed time as the tape runs.

REMAINING TAPE TIME INDICATOR

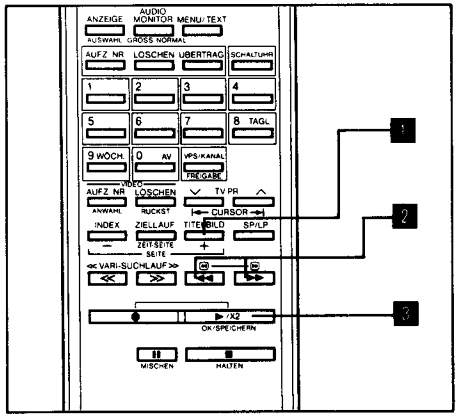
The tape counter is switchable to the remaining tape time indicator.

1. Press ANZEIGE ㉜ or (62) to obtain the Remain mode (RESERVE).
2. The remaining length will be shown in hours and minutes.

Notes:
- During recording, the remaining tape length is calculated in reference to the recording mode selected by the SP/LP button; during playback, it is calculated in reference to the recording mode of the tape being played (SP/LP).
- The indicated remaining time is approximate. The time required to calculate the remaining tape length and the accuracy of that calculation may vary according to the type of cassette tape. (The remaining time indication is not available if this mode is engaged from Fast Forward or Rewind.)

INTRO SEARCH FUNCTION

The Intrq Search function lets you visually check the contents of each recording by playing back in fast motion a short segment of a programme each time an index code is detected.


ANZEIGE
AUDIO MONITOR
MENU/TEXT
AUSWAHL
GROSS/NORMAL
AUFZ NR
LÖSCHEN
ÜBERTRAG
SCHALTUHR
1
2
3
4
5
6
7
8 TAGL
9 WÖCH
0
AV
VPS/KANAL
FREIGABE
VIDEO
TV PR
ANWAHL
RÜCKST
CURSOR
INDEX
ZIELLAUF
TITELBILD
SP/LP
ZEIT/SEITE
SEITE
VARI-SUCHLAUF
▶/X2
OK/SPEICHERN
MISCHEN
HALTEN
1
2
3

1 Press TITELBILD (73) while in the Play or Stop mode.
- The INDX indicator on the FDP will light.

2 Press the (▶▶) or (◀◀) button (76) within 2 seconds.
- The Intro Search will start in the corresponding direction.
- Each time an index code is detected, the corresponding part is played back at the search speed (9 times normal) for about 5 seconds.

3 When you find the section you want to view, simply press the (▶ /X2) button (79) .
- Normal playback will start.

OTHER RECORDING POSSIBILITIES

RECORDING A TV PROGRAMME WHILE WATCHING ANOTHER

A programme not being viewed can be recorded while you enjoy another programme. This permits the recorded programme to be played back later at your convenience.
The recording procedure is exactly the same as described on the previous page. The points to be remembered are:
- Select the channel you wish to record with the recorder's channel select buttons.
- Select the channel you wish to view with the TV receiver's channel selector.

RECORDING STEREO TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)

If stereo TV programmes are broadcast in your area, the HR-S5000EG automatically receives them in stereo. When a stereo programme is being received, the STEREO indicator ❼ lights and recording is made in stereo on the hi-fi audio track and in mono (mixed L + R) on the normal audio track. To listen to the stereo soundtrack during recording, press the AUDIO MONITOR button ㉔ so that L and R light. If this button is left pressed for either L or R, you will hear only one channel while recording, though the recording is being made in stereo.

RECORDING BILINGUAL TV PROGRAMMES

(Applicable only to the West German Sound-Multiplex TV system)

When a bilingual TV programme is being received, the 2-TON indicator ❽ lights. There is a switch to select the soundtrack to be recorded on the normal audio track, however, because both soundtracks are recorded always on the hi-fi track for selective listening, you can ignore the switch labelled 2-KANAL TON ⑬ in most cases unless you need a specific soundtrack on the normal audio track.
- Set 2-KANAL TON switch ⑬ to HAUPT to record the main soundtrack (local language), to NEBEN to record the sub soundtrack (foreign language).
- To listen to the selected soundtrack from the hi-fi audio track while recording, press the AUDIO MONITOR button for either L or R.
- To listen to the soundtrack being recorded on the normal audio track, press the AUDIO MIX button ㉗ for NORM.

RECORDING FM SIMULCAST TV PROGRAMMES

FM simulcast TV programmes can be recorded using an FM stereo tuner. Connect necessary components. (Connect the FM tuner to the rear panel AUDIO EING. connectors.) Select the TV channel broadcasting the simulcast programme with the recorder's channel select buttons and tune the FM stereo tuner to the station broadcasting the soundtrack for this TV programme.
The only difference from the basic recording procedure is an additional step after step **5** on page 51.
- Press SIMUL button ㉘ .

  Then the SIM indicator will light. With this setting, the video and audio signals from the built-in tuner will be recorded on the video and normal audio track and the audio signal from the FM stereo tuner will be recorded on the hi-fi audio track.

Notes:
- After finishing recording, be sure to press the SIMUL button to switch back to the Tuner.
- While recording simulcast programmes, it might happen that the hi-fi sound distorts momentarily at switching points between different programmes. This is not due to any defect of the unit.

RECORDING A TV PROGRAMME WHILE RECORDING AN INDEPENDENT AUDIO SOURCE

Using the "simulcast" recording function, you can record independent audio and video programmes, because the TV soundtrack is not lost, but recorded on the normal audio track. While recording a TV programme, record any audio source independently.
- Connect an audio component (such as an FM tuner) to the AUDIO EING. connectors (85) .
- Press SIMUL button. The SIM indicator on the FDP will light.

Notes:
- If you stop recording to avoid unwanted material of the TV programme using the PAUSE/STANDB. button, the audio programme from an external source is also cut.
- If television broadcasting comes to an end during recording, the hi-fi sound being recorded from an external source may distort. It is recommended that you check the timetable of TV broadcasts in advance.
- After finishing recording, be sure to press the SIMUL button to switch back to the Tuner; otherwise recording on the hi-fi audio track from the built-in tuner will not be possible.

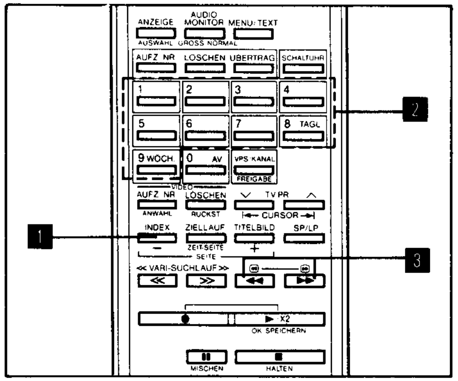
USING THE HR-S5000EG AS AN AUDIO TAPE DECK

You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240).
- Connect an audio source (such as an FM tuner) to the AUDIO EING. connectors.
- Tune the built-in tuner to a vacant channel.
- Press SIMUL button. The SIM indicator on the FDP will light.

INDEX SEARCH FUNCTION

The Index Search function gives you automatic access to locations on the tape where index codes are recorded. Index codes are recorded automatically at the beginning of recordings which are started from the Stop or Timer Standby mode, or recorded manually at any other position during recording or playback. Unnecessary codes can be erased manually during playback. In neither case is there any effect on the audio or video recordings on the tape. With the HR-S5000EG, you can access any one of up to 9 of these indexed segments in either the forward or reverse direction.

Using the Index Search function



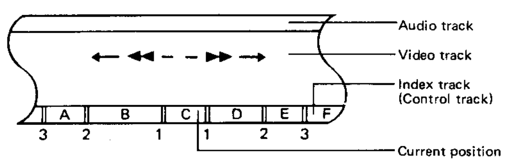
1 Press INDEX (74) while in the Play or Stop mode.
- The channel display on the FDP will change to the Index Search mode and the "INDX" indicator will light.

2 Specify the index number using one of the numeric keys (67) (1 – 9) within 10 seconds.
- The specified number will appear on the FDP.

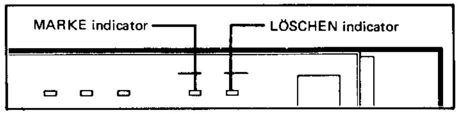
3 Press either ◀◀ or ▶▶ (76) .
- The tape will move and the index numbers count down to 0, where normal playback will start.
- If the INDEX button was pressed in the Play mode, the screen shows search pictures; if the button was pressed in the Stop mode, the index codes are detected in the much faster Rewind or Fast-Forward mode.

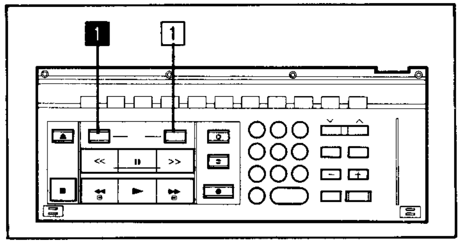
Notes:
- To cancel the Index Search mode before completion, press (▶ /X2) (79) or (■) (81) .
- If the end of the tape is reached while still in the Index Search mode, the mode is cancelled and the tape rewound.

Tips for specifying the index number



- "1" + ▶▶ moves playback to the beginning of segment D.
- "1" + ◀◀ moves playback to the beginning of segment C.
- "2" + ◀◀ moves playback to the beginning of segment B.
- If no number is entered, a value of "1" is assumed.





Marking extra index codes

1 Press INDEX MARKE (53) while in the Record or Play mode.
- An index code will be recorded on the tape.
- The MARKE indicator ⑩ will blink while the index code is being recorded.

Erasing index codes

[1] Press INDEX LÖSCHEN (63) while in the Play mode.
- First the Shuttle Search mode will be engaged and, when an index code is detected, it will be erased automatically. Then the Erase mode will be cancelled and playback resumes.
- The LÖSCHEN indicator ⑪ remains lit during the searching process and blinks while the code is being erased.

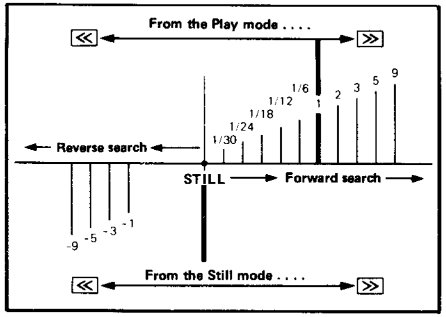
Notes:
- Index codes cannot be added or erased on a tape with its safety tab removed.
- While the index code is being searched for in the Erase mode, random noise appears on the screen.
- Audio is muted in both the Mark and the Erase modes.
- Marking index codes is not possible while audio dubbing or insert editing is being performed.

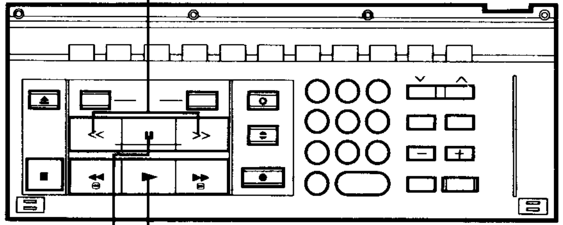
SPECIAL-EFFECTS PLAYBACK

Variable search (VARI-SUCHLAUF, ⪡ and ⪢ (51) or (77))

Variable speed search is possible in either forward or reverse direction from either the Still or Play mode.

- To search in the forward direction:
  - Press the ⪢ button in the Play mode to start fast-motion searching from 2 times normal speed. To increase speed (to 3, 5, 9 times normal), press ⪢ repeatedly.
  - Press the ⪢ button in the Still mode to start slow-motion searching from 1/30 normal speed. To increase speed (to 1/24, 1/18, 1/12, 1/6, normal, X2, X3, X5, X9), press ⪢ repeatedly. To decrease speed, press ⪡ repeatedly. (Pressing the ⪡ button in the Play mode, starts slow-motion searching at 1/6 normal speed.)
- To search in the reverse direction:
  - Press the ⪡ button in the Still mode to start searching in the reverse direction at the same speed as normal speed playback. To increase speed (to -3, -5, -9 times normal), press ⪡ repeatedly. To decrease speed, press ⪢ repeatedly.
- To return to the normal Play mode, press the WIEDERGABE/X2 button.





Notes:
- No audio is available during any Special-effects playback mode.
- If noise bars are visible, use the SPURLAGE control buttons as described on the previous page.

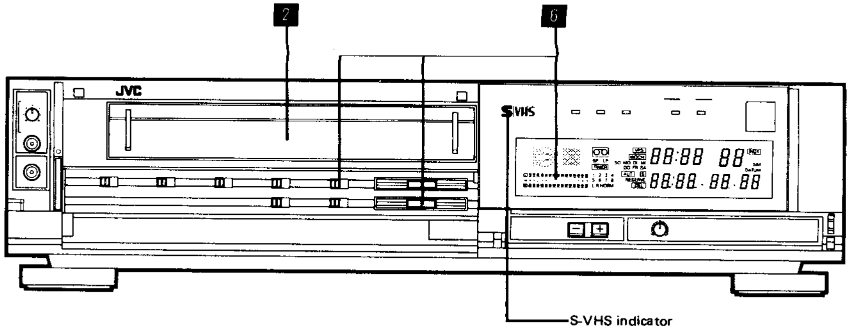
STILL PICTURE

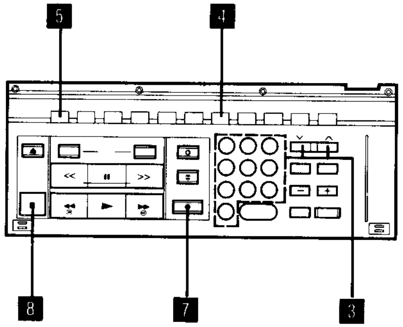
1. Press PAUSE/STANDB. ㊽ during playback.
2. To advance the still picture, press PAUSE/STANDB. a number of times.
3. To cancel the Still mode, press WIEDERGABE/X2.

Notes:
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- With some televisions, the still picture may be unstable. This is not due to any defect of the unit. If vertical vibration of the picture is observed, attempt to correct it by turning the V-BILDFANG control on the rear of the video recorder.

DOUBLE-SPEED PLAYBACK
- Press WIEDERGABE/X2 ㊾ while in the Play mode; double-speed playback will be engaged.
- To resume normal playback, press the same button again.

BASIC OPERATION FOR RECORDING TV PROGRAMMES





1 Turn the TV receiver on and set it as required.

2 Load a cassette (with safety tab in place).
- Power will be switched on automatically.

3 Press either KANAL (∨ / ∧) button [illegible] or the numeric keys [illegible] to select the channel you wish to record.

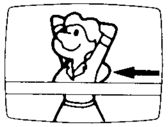
4 Select the recording speed with SP/LP button [illegible]
SP: 4 hours with an E-240 cassette.
LP: 8 hours with an E-240 cassette. (Check the SP/LP indicator on the FDP.)

5 For S-VHS recording, press S-VHS button ㉕ so that the S-VHS indicator ⑤ will light.

6 Make Hi-Fi audio recording level adjustment as required. Refer to page 46.
- For automatic level adjustment, simply set the AUDIO-BEGRENZER switch [illegible] to EIN.

7 Press AUFN./DA [illegible] to start recording.
- Be careful to press AUFN./DA only once, or Instant Timer Recording will begin.
- Press (●) (78) and (► /X2) (79) simultaneously when using the remote control unit.
- If there is part of the programme you do not want to record, press PAUSE/STANDB. ㊽ . A white horizontal bar will appear on the screen, which reduces in size in 4 steps as time elapses. When the last quarter starts blinking and disappears, the Stop mode will be entered automatically. The pause duration is possible for about 5 minutes.

Pause mode indicator



- To continue recording from the Pause mode, press WIEDERGABE/X2 while the white bar is on-screen.

8 Press STOP [illegible] at the end of the programme.
- When the end of the tape is reached during recording, the tape is automatically rewound and stops.

INSTANT RECORDING

If you wish for recording to stop automatically after a certain period of time, use this Instant Timer Recording mode.

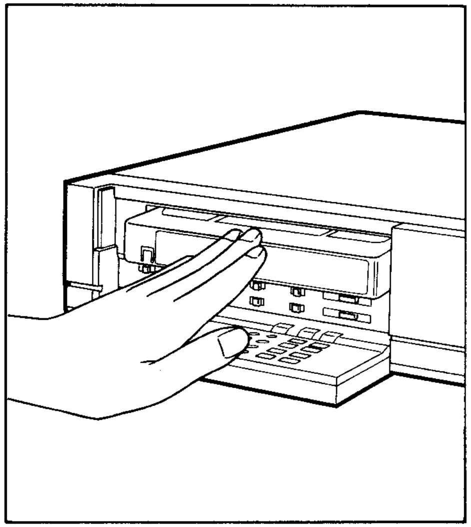
1. Press AUFN./DA during recording (or twice if in the Stop mode).
   - Recording will begin and the FDP shows " AUT 0:30", indicating that recording will automatically stop and power will switch off after 30 minutes.
2. Ajust the switch-off timer, if necessary.
   - Press AUFN./DA to increase the time in 30-minute increments (possible up to 4 hours).
   - Use the numerick keys to set to a more precise time when required (possible up to 8 hours 59 mintes). Always key in a full number including hours and minutes. For "0:35", key in zero first. After setting the time, press AUFN./DA immediately.

Notes:
- When recording is restarted from the Pause mode, assemble recording is performed so that the playback picture will not distort at the edit point.
- The selected channel cannot be altered during recording. If you wish to change the channel, first engage the Pause mode and then select a different channel.

LOADING AND UNLOADING A CASSETTE

Loading

Insert a cassette as illustrated. Be sure to insert if firmly into the slot; otherwise, it will be automatically ejected.



- The automatic loading mechanism will operate only when the cassette is inserted correctly.
- With either a VHS or S-VHS cassette inserted, the "cassette loaded" indicator will appear on the FDP. When an S-VHS cassette is loaded, the S-VHS KASS. indicator also lights.

Unlaoding

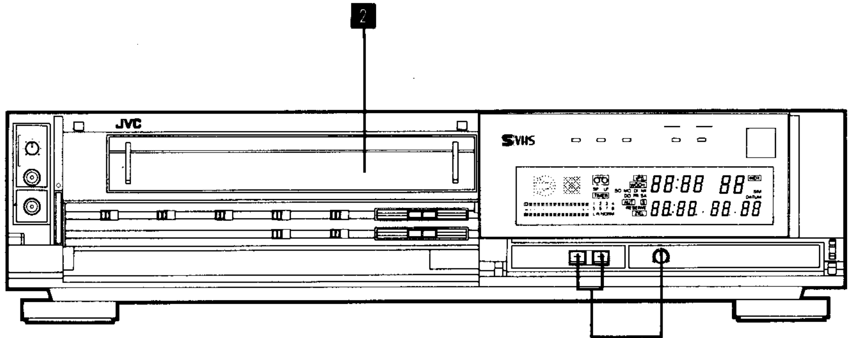
Press the KASSETTE button ㉔ .

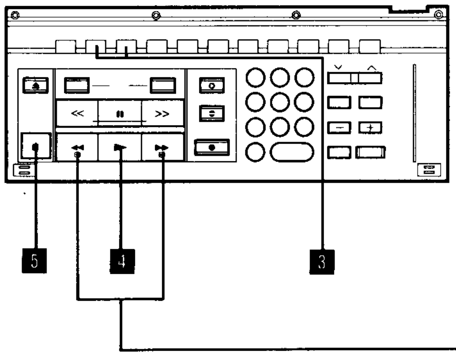
CAUTION
- If unloading of the cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the SCHALTUHR button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.
- Do not insert fingers or any foreign object beyond the door of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

AUTO POWER-ON AND AUTO PLAY SYSTEM
- The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

POWER-OFF EJECT SYSTEM
- The cassette can be unloaded even after the power has been turned off. Pressing the KASSETTE button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.

PLAYING BACK A VIDEO CASSETTE





Picture Sharpness Adjustment
Images on the screen can be adjusted to a preferred softer or sharper definition by turning the BILDSCHÄRFE control ㉓ in the corresponding direction.
Tracking Adjustment
Noise bars may appear on the screen if you play back a tape which was recorded using another recorder. For correction, press either SPURLAGE button ㉒ . Tracking will be reset to the preset standard each time the cassette is ejected.

1. Turn the TV receiver on and set it as required. (See pages 39 and 40.)
2. Load a pre-recorded cassette.
   - Power will be switched on automatically.
   - When the cassette loaded has no safety tab, playback will start automatically.
3. Make the AUDIO MONITOR ㉖ and AUDIO MIX ㉗ setting as required. (See page 47.)
4. Press WIEDERGABE/X2 ㊾ .
5. Press STOP ㉜ at the end of the programme.
   - The tape will be rewound automatically when its end is reached and the recorder will enter the Stop mode.

SHUTTLE SEARCH
Shuttle Search allows high-speed playback at 9 times normal speed in either direction.
1. Press either RÜCKLAUF or VORLAUF Shuttle Search ㊿ or ㊼ during playback.
2. To cancel the Search mode, press WIEDERGABE/X2.
   - For briefer scanning, keep the Shuttle Search button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.

Notes:
- The SP or LP mode recording is automatically detected and played back at the correct speed.
- Irrespective of the S-VHS mode button setting, the S-VHS or VHS recording mode is automatically detected and played back in the correct mode. The S-VHS mode indicator lights for playback of S-VHS recordings.

Hi-Fi audio recording level adjustment

While recording onto the normal audio track is controlled by the built-in Automatic Level Control circuit, hi-fi audio recording has two control options: manual and automatic.

AUDIO-BEGRENZER switch

Setting this switch to EIN activates the built-in audio limiter circuit for both channels so that the recording level is automatically controlled. For manual adjustment, set this switch to AUS. (The recording level for normal audio is always controlled automatically regardless of the setting of this switch.)

PEGELANZEIGE switch and SPURLAGE buttons

The right-channel audio level indicator also functions as a tracking meter during playback. If noise or breaks are sensed in the reproduced sound from the hi-fi audio track or noise bars are visible on the screen, attempt to correct using the SPURLAGE buttons while referring to the meter. For this purpose, set this switch to Hi-Fi SPURLAGE and press the buttons so that the greatest number of elements of the right-channel indicator light. When this switch is set to AUS, the indicators do not light, regardless of whether during recording or playback.

Note:

When playing back a tape with no recording on the hi-fi audio track, the level indicator does not light when the PEGELANZEIGE switch is set to Hi-Fi SPURLAGE.

Audio level indicators

For manual control of the recording level, first set the relevant switches as follows:

AUDIO-BEGRENZER ⓳ → AUS
PEGELANZEIGE ⓴ → EIN
AUDIO MONITOR ㉖ → L and R (Hi-Fi Stereo)

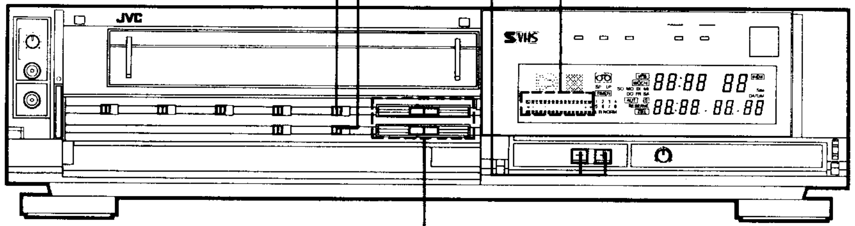
Then slide the Hi-Fi AUFN. controls referring to these indicators. When indicators up to or near 0 dB light for the loudest signal being applied, the recording level is optimum. (The level at which only one red indicator lights from time to time may be most appropriate.)

During playback, these indicators show the level of audio signals recorded on the tape.

These indicators do not light when the PEGELANZEIGE switch is in the AUS position.

Notes:

- With the AUDIO MONITOR and AUDIO MIX buttons pressed so either L, R or NORM lights on the FDP, the recording level of hi-fi audio signals cannot be correctly indicated. Select the L and R indication when adjusting the recording level.
- The normal audio signal level is also displayed by these indicators, but cannot be adjusted.



Hi-Fi AUFN. controls

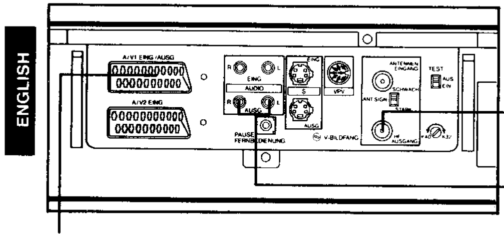
Slide these controls, the upper for left channel and the lower for right channel, for manual adjustment of the hi-fi audio recording level.

Note:

When a microphone is connected to the MIKROFON jack, set the AUDIO-BEGRENZER switch to the EIN position to protect against over-level input signals from the microphone.

Dual-audio playback flexibility

Two different types of audio tracks (hi-fi and normal) allow a variety of playback options depending on the connection and the settings of relevant controls and switches.



HF AUSGANG connector

Delivers audio (both hi-fi and normal) and video signals to a TV receiver. When the recorder is not used, the aerial signal is supplied from this connector to the TV receiver to allow regular TV viewing; when a video tape is played back through the HF AUSGANG connector, the audio is reproduced always as monaural; with hi-fi stereo tapes, both channels are mixed. Therefore, for stereo playback, connect a stereo system to the AUDIO AUSG. connectors or a stereo television to the A/V1 EING./AUSG. socket. Refer to page 40.

A/V1 EING./AUSG.

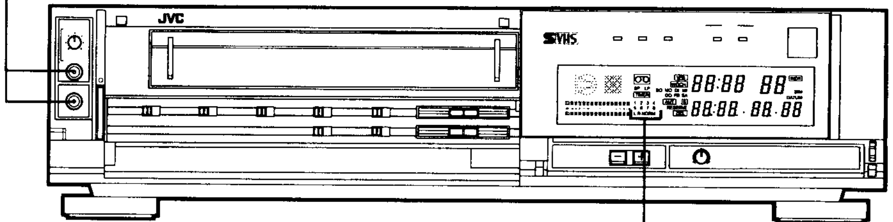
Delivers audio (both hi-fi and normal) and video signals.

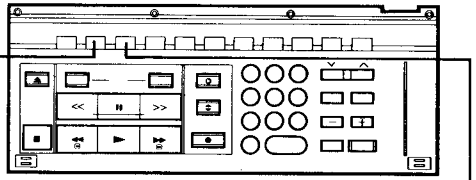
AUDIO AUSG. connectors

Delivers the audio signals from both hi-fi and normal audio tracks.

KOPFHÖRER jack and KOPFHÖRER PEGEL control

Delivers the audio signals from both hi-fi and normal audio tracks. The headphone output level is adjustable with the KOPFHÖRER PEGEL control.





Audio monitor indicators
(L, R, NORM)

AUDIO MONITOR button

Selects the hi-fi audio channel (left, right or both) for listening. Use this button together with the AUDIO MIX button referring to the three LED indicators (L, R and NORM) on the FDP.

- When the power is turned on, the L and R indicators light and both hi-fi stereo soundtracks can be listened to. Press this button and only the L indicator lights to listen to only the left hi-fi channel sound.
- Press this button again and only the R indicator lights to listen to only the right hi-fi channel sound.

Notes:

- This button functions during recording as well, although it has no effect on the recorded signal.
- With the AUDIO MIX button pressed for the NORM setting, pressing the AUDIO MONITOR button has no effect.

AUDIO MIX button

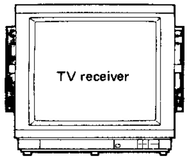
Operates in conjunction with the AUDIO MONITOR button to select sound tracks for listening.

- When the power is turned on, both hi-fi stereo soundtracks can be listened to. Press this button once to listen to only the normal soundtrack (the NORM indicator lights).
- Press this button again to listen to a mixture of hi-fi stereo (L and/or R) and normal soundtracks, by selecting the combination with the AUDIO MONITOR button.

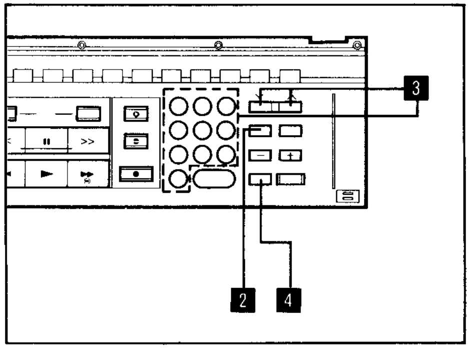
Notes:

- This button functions during recording as well, although it has no effect on the recorded signal.
- When playing back a tape containing the same soundtrack on both hi-fi and normal audio tracks, a slight time lag is sensed between the two soundtracks, probably with some distortion when listening in the Mix mode.

Storing channels

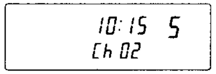


Turn the TV receiver to ON and adjust it to your video channel.

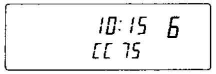


A. Automatic setting

1. Turn the recorder's power on.
   - The display will change from the Date mode to the Counter mode.
2. Press the KANAL-SUCHLAUF button ㊲ .
   - The display will change to the Real Channel mode and automatic scanning will take place for "Ch" channels, then for "CC" channels.
   - Reverse search will be engaged if the KANAL-SUCHLAUF button is kept depressed.

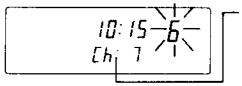


VHF channel 2 is stored for channel position 5.



Cable channel 75 is stored for channel position 6.

- When a broadcast is detected, scanning stops automatically and the displayed channel position number will blink.



"Colon" will appear to indicate that this real channel is not stored for the indicated channel position.

3. Select a channel position into which you wish to store that station by using the numeric keys ㊸ or the KANAL buttons ㊱ while the channel position number is blinking.
4. After confirming the real channel number and channel position number, press the SPEICHERN button ㊶ until the channel position number stops blinking.
   - "Colon" will disappear and the selected station has been stored.

B. Manual Setting from remote control unit

(1) Press the VPS/KANAL button (58) .
- The display will change to the Real channel mode.

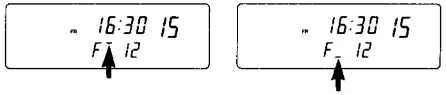
(2) Press the VPS/KANAL button until the real channel number starts blinking.
- Pressing the VPS/KANAL button will alternate the real channel mode between Ch and CC.
- Blinking will stop in 10 seconds.

(3) Enter the number of a real channel to be preset.
- The channel position number will start blinking.

(4) Select a channel position into which the selected real channel is to be stored, using the 10-digit keypad.
- Always key in a two-digit number ("05" for channel position 5 for example) and depress the numeric key for the second digit continuously until blinking stops. This enables the entered number to be stored.
- The display will return to the clock mode by simply keying in the channel number to be viewed.

● Fine Tuning

For fine tuning, use the FEIN "+" or "–" button [illegible] in step 3 (both in automatic and manual setting) "+" to fine-tune in the direction of increasing frequencies, and "–" to fine-tune in the direction of decreasing frequencies.



Upper or lower "-" sign indicates the operating tuning frequency is above or below the standard broadcast frequency.
Centre "-" sign will appear when it corresponds to the standard.

Skipping the stored channels

1. Call up the channel position number that you wish to skip by using the KANAL buttons or 10 numeric keys.
2. Press the KANAL/VPS button.
3. Press the UBERSPRINGEN button [illegible] .
   - "Colon" will appear to indicate that the displayed real channel is not stored.
   - The skipped channel position number will not appear on the channel display during up/down scan tuning.

Note:

If no command is given after each step of the setting operation, the Real Channel mode will be automatically cancelled in 10 seconds.

INFORMATION ON THE HR-S5000EG'S AUDIO SYSTEM

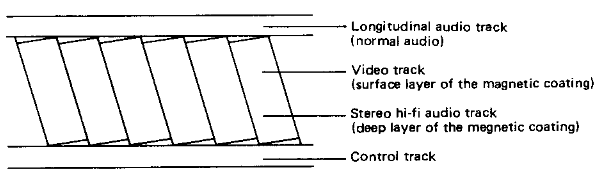
Hi-Fi and normal audio

To provide true hi-fi audio accompaniment to video entertainment and, at the same time, compatibility with regular VHS tapes, the HR-S5000EG employs a unique audio recording system. Hi-fi audio signals (2-channel) are recorded deep into the tape's magnetic coating, and the video signal is recorded on top of the audio signals in a shallower layer. At the same time, another audio head records normal audio signals (monaural) onto the usual longitudinal audio track. Since this longitudinal audio track is exactly the same as on monaural VHS tapes, VHS tapes recorded on the HR-S5000EG can be played back on other monaural VHS machines, and vice versa. Also, this longitudinal track can be replaced later with new recordings through audio dubbing.

CAUTION:

The hi-fi soundtrack recorded with the HR-S5000EG cannot be reproduced with video equipment other than Hi-Fi VHS.

Tape pattern recorded with HR-S5000EG



Hi-fi audio recording and reproduction are available only from the hi-fi audio track while the longitudinal audio track provides normal audio.

The hi-fi and normal soundtracks are recorded simultaneously, and audio dubbing is applicable only to the normal audio.

Recording options according to the selected input mode

Input mode / Track	Video track	Normal audio track (mono)	Hi-fi audio track (2-channel)
TUNER SIMUL ☐ (button pressed to OFF)	TV picture (from built-in tuner)	**TV sound (from built-in tuner)**	**TV sound (from built-in tuner)**
SIMULCAST SIMUL ☐ (button pressed to ON)	TV picture (from built-in tuner)	**TV sound (from built-in tuner)**	Audio signal from AUDIO EING. (Mixing with microphone input is possible.)
AUX AU Channel display section	Video signal from A/V1 EING./AUSG., A/V 2 EING. or S EING.	Audio signal from A/V1 EING./AUSG. or A/V2 EING. (Mixing with microphone input is possible.)	

Notes:

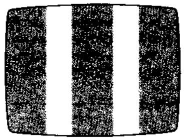
- To engage the AUX mode, press the "0" key of the 10-digit keypad.
- Microphone input will be mixed with the audio signals on the hi-fi audio track. Therefore, do not leave a microphone connected to the MIKROFON jack unless needed.
- You can record audio only (without recording any video signal) on the hi-fi audio track. This means you can record a continuous 8-hour FM programme onto a single cassette (E-240). For this purpose, press the SIMUL button so SIM lights on the FDP and connect an audio source, such as an FM tuner, to the AUDIO EING. connectors (46) . And tune the built-in tuner to a vacant channel.

Recording options according to the type of broadcasts and the setting of the 2-KANAL TON switch

Type of broadcast	2-KANAL TON switch position	Normal audio track (mono	Hi-fi audio track (2-channel) L	Hi-fi audio track (2-channel) R
Regular (monaural audio)	Either position	Mono	Mono	Mono
Stereo broadcast	Either position	L + R mixed	Stereo	
Bilingual broadcast	HAUPT	Main soundtrack (local language)	Main soundtrack (local language)	Sub soundtrack (foreign language)
	NEBEN	Sub soundtrack (foreign language)		

VIDEO CHANNEL SETTING

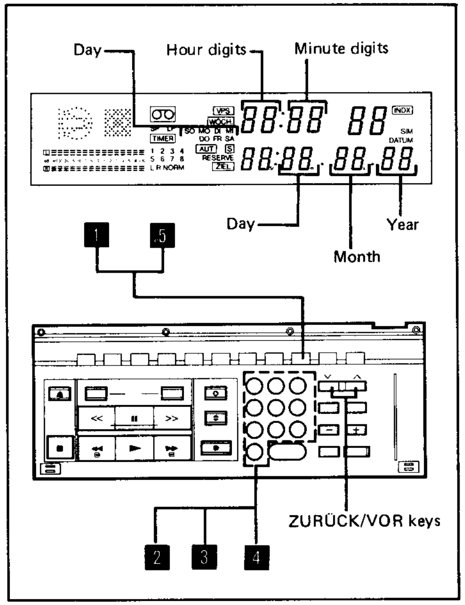
1. Press the BETRIEB button ③ to turn the power on. Turn on the TV receiver.
2. Set the TEST switch (90) to EIN.
3. Adjust your TV receiver in the vicinity of UHF channel 36 until you bring in the two white signal bars on the screen as illustrated. This is your VIDEO CHANNEL.
4. Reset the TEST switch to AUS.



Notes:
- ●If some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to shift the RF converter output frequency from that of channel 36. Consult your JVC dealer for making this adjustment.
- ●Video channel setting is also possible using a prerecorded VHS video cassette. Play back the tape and tune the TV receiver to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- ●If your TV receiver is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video cassettes.

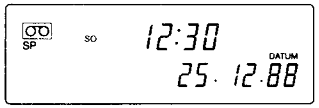
CLOCK SETTING

Plug the HR-S5000EG into an AC outlet. The display shows a blinking "0:00".
- ●Clock setting can also be performed by using the on-screen display. Refer to the "Handy Teletext & VPV Operation Guide" accompanying this instruction manual for on-screen clock setting.



Power failure indicator
The blinking "0:00" (initial condition of the display) is also a power failure indicator, showing that there has been a power failure exceeding 3 to 5 minutes. Re-adjusting the time restores the normal condition of the clock display.

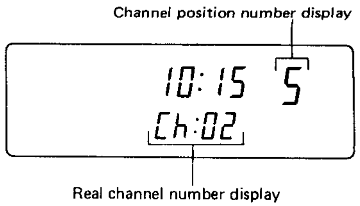
1. Press UHR-EINSTELLUNG ㉝ .
   - ●The display will change to the Clock Set mode with the hour digits blinking and ready for entry.
2. Set the hour and minute in that order.
   - ●To set a one-digit numer, first press "0", then press the numeric key for 1 to 9.
   - ●Zero will not be displayed in the tens place of the hour indication unless the cursor is moved back to the hour digits.
   - ●For a two-digit number, simply press the corresponding numeric keys in the right order.
   - ●In hour setting, numbers larger than 23 will be rejected.
   - ●In minute setting, numbers larger than 59 will be rejected.
3. Set the day and month in that order.
   - ●The setting method is the same as for time setting.
   - ●In day setting, invalid numbers such as 32 of January or 30 of February will be rejected.
   - ●29 of February will be accepted only during leap years.
   - ●In month setting, numbers larger than 12 will be rejected.
4. Set the year.
   - ●Key in only the last two digits of the year.
5. Press UHR-EINSTELLUNG.
   - ●Press it at the exact instant of the time signal, and the clock will be set accurately to the present time.
   - ●The day-of-the-week indication will be displayed automatically.



Notes:
- ●If you press a wrong numeric key, you can return to the previous position using the ZURÜCK key ㊵ .
- ●Once all necessary data have been entered, you can reach any position for correction using the ZURÜCK and VOR keys.
- ●Clock setting is not possible during playback, or if the SCHALTUHR button ㉟ is engaged with the TIMER indicator lit. First check to see that the TIMER indicator is off.

OPERATING THE BUILT-IN TUNER

The HR-S5000EG incorporates an advanced frequency synthesized tuner which is pretuned to 112 channels to cover VHF, UHF and CATV broadcasts. Channel indication is given in two different ways: real channel numbers and channel position numbers. Real channel number indication is available by pressing the KANAL/VPS button ㉞ or VPS/KANAL button (68) , during search by pressing the KANAL-SUCHLAUF button ㊲ , while channel position number indication is always available in the channel display.



Correspondence between 112 pretuned TV stations and the HR-S5000EG's real channel indications

DISPLAY	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ch	–	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	A	B	C	D	E	F	G	H
CC	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
DISPLAY	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Ch	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39	E40
CC	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40
DISPLAY	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
Ch	E41	E42	E43	E44	E45	E46	E47	E48	E49	E50	E51	E52	E53	E54	E55	E56	E57	E58	E59	E60
CC	S41	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
DISPLAY	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**			**75**	**76**	**77**						
Ch	E61	E62	E63	E64	E65	E66	E67	E68	E69			–	–	–						
CC	–	–	–	–	–	–	–	–	–			X	Y	Z						

Stored channels
A total of 112 channels are receivable. Of them, up to 48 can be stored for easy channel selection. Prior to shipment, some channels are stored.
It is possible to store more channels or skip some channels if there are no broadcasts on those channels in your area. It is possible to change the stored channels to correspond to your preferred channel allocation. Skipped channels can be restored whenever necessary.
- ●Channel memories are permanent; the programmed channel allocation will not be erased even if the recorder is unplugged from the AC outlet.

Channel selection
To select a channel for recording, normally use the KANAL (TV PR.) buttons ㊱ ((69)) or 10 numeric keys [illegible] [illegible] . You can choose any channel from among the stored ones by calling up the corresponding channel position number.
- ●Use the KANAL " ∨ " button to scan to a channel in the direction of decreasing numbers; the KANAL " ∧ " button, in the direction of increasing numbers.
- ●When using the 10 numeric keys, pay attention to the following: To set a one-digit number, first key in 0. To key in a two-digit number, enter numbers in sequence. The number entered first will be shifted to the tens place. An invalid number (larger than 48) will be rejected.

If you want to select a channel other than those stored, engage the Real Channel mode and call up a channel, while referring to the real channel number display.
With recorder's controls:
- ●Press the KANAL/VPS button ㉞ to engage the Real Channel mode and call up a channel by using the 10 numeric keys. Or simply press the KANAL-SUCHLAUF button ㊲ .

With remote control:
- ●Press the VPS/KANAL button (68) to engage the Real Channel mode and call up a channel by using the 10 numeric keys. For details refer to the next page.

(b) RGB connection

For this connection, the optional KM-V7EG RGB signal converter is necessary. Connect the A/V1 EING./AUSG. connector of the recorder (or VPV adapter's 21-pin connector) to the RGB signal converter, and the RGB signal converter to the RGB-compatible AV IN connector of the television. The Y/C signal is converted into an R/G/B signal and high-quality S-VHS pictures are available. For this purpose, set the AV1 VIDEO-AUSG. switch ● to Y/C and put the television in the RGB mode.

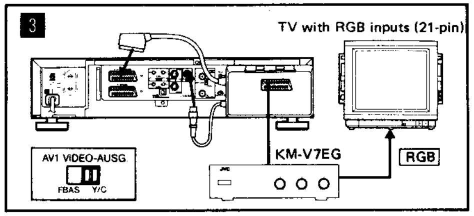
(c) Y/C connection

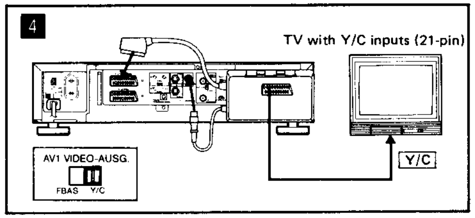
If your television is equipped with a Y/C-compatible AV IN connector, simply connect the A/V1 EING./AUSG. connector of the recorder (or VPV adapter's 21-pin connector) to the Y/C-compatible AV IN connector of the television. To reproduce high-quality pictures, set the AV1 VIDEO-AUSG. switch ● to Y/C and put the television in the Y/C mode.

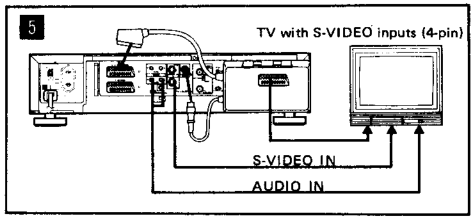
(3) 4-Pin S connection

If your television is equipped with a 4-pin S-VIDEO IN connector, simply connect the S AUSG. connector of the recorder to the S-VIDEO IN connector of the television using the provided S-VIDEO cable, and connect the AUDIO AUSG. connectors of the recorder to the AUDIO IN connectors of the television.

Note:
For switching the TV's input mode, refer to the instruction manual of your television.


3
TV with RGB inputs (21-pin)
AV1 VIDEO-AUSG.
FBAS Y/C
KM-V7EG
RGB


4
TV with Y/C inputs (21-pin)
AV1 VIDEO-AUSG.
FBAS Y/C
Y/C


5
TV with S-VIDEO inputs (4-pin)
S-VIDEO IN
AUDIO IN

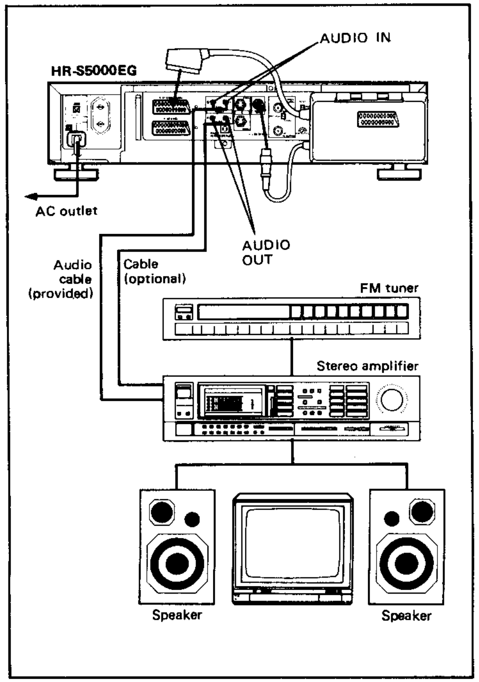
Audio connection

For more dynamic sound reproduction, a stereo system can be connected. By doing so, even with monaural televisions, you can play stereo and bilingual programmes. When listening to sound from the connected stereo system, turn down completely the sound volume of the television.

Connect the AUDIO EING. L and R connectors of the recorder to the recording output terminals of the amplifier, and connect the AUDIO AUSG. L and R connectors of the recorder to the AUX IN or TAPE MONITOR terminals of the amplifier.

If you want to timer-control the recording of FM simulcast programmes, connect the tuner's power cord to the HR-S5000EG's AC outlet. Set the NETZAUSGANG switch ● to EIN, and both the tuner and the recorder will be switched on at the recorder's preprogrammed time. Timer-controlled recording of FM simulcast programmes is not possible with the type of tuners which reset the channel each time the power is switched off.

CAUTION
- The HR-S5000EG has a dynamic range of more than 90 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture will not be normal because of mutual interference.


AUDIO IN
HR-S5000EG
AC outlet
AUDIO OUT
Audio cable (provided)
Cable (optional)
FM tuner
Stereo amplifier
Speaker
Speaker

FOR A BETTER UNDERSTANDING OF S-VHS AND VHS

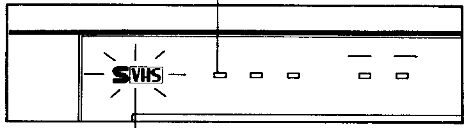
S-VHS vs. VHS

- VHS is the world's most popular video format. If you owned a VCR before the HR-S5000EG, most likely it was a VHS machine.
- S-VHS is a new video sub-format based on VHS. It offers superior picture quality with a horizontal resolution of more than 400 lines by shifting the FM carrier frequency of the luminance signal from the conventional 3.8 – 4.8 MHz range to a higher one of 5.4 – 7 MHz.

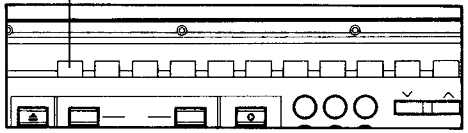
- The HR-S5000EG is equipped for recording and playback in both the S-VHS and VHS formats. Therefore, you can still play back your VHS software programmes and previously recorded family recordings.
- You can switch to the world of S-VHS for your new recordings to enjoy breath-taking picture quality. Or to exchange recordings with someone whose VCR is not S-VHS, simply record in the VHS mode, whether with a regular VHS cassette or an S-VHS cassette.

S-VHS Recording

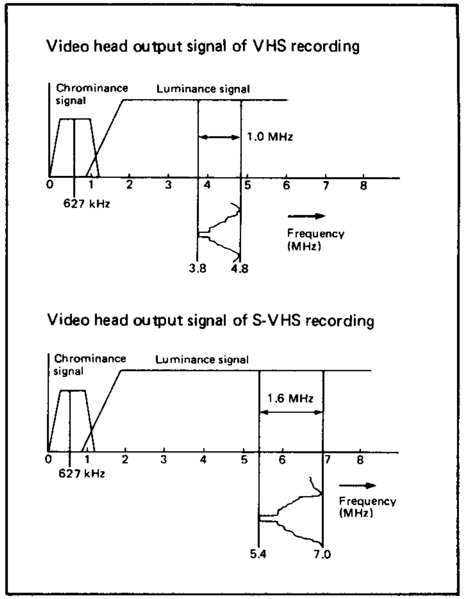
Insert an S-VHS cassette: this indicator will light.



Press the S-VHS button: this indicator will light.

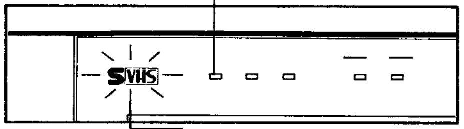


Recording Signal Spectrum



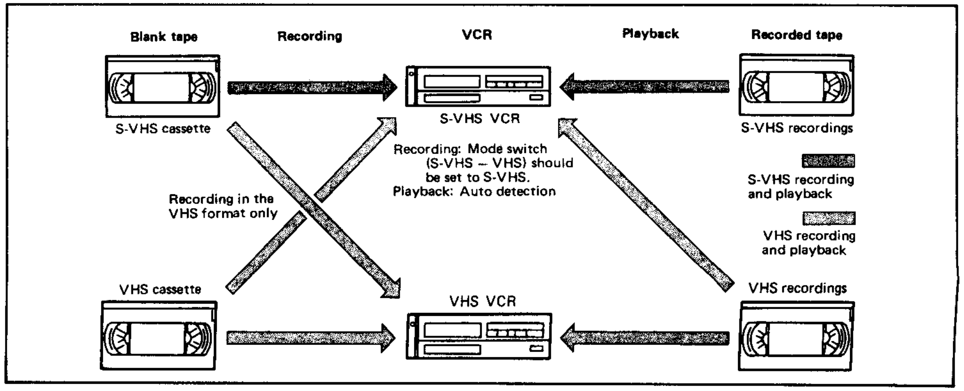
S-VHS Playback

Simply insert a recorded S-VHS cassette: this indicator will light.



When playback starts, this indicator will light automatically.

Compatibility between S-VHS and VHS


Blank tape
Recording
VCR
Playback
Recorded tape
S-VHS cassette
S-VHS VCR
S-VHS recordings
Recording: Mode switch (S-VHS – VHS) should be set to S-VHS.
Playback: Auto detection
Recording in the VHS format only
S-VHS recording and playback
VHS recording and playback
VHS cassette
VHS VCR
VHS recordings

(65) **Programme button (AUFZ. NR.)**
Press to programme the remote control's timer memory.

(66) **Cancel button (LÖSCHEN)**
Press to cancel the programmed data in the remote control's timer memory.

(67) **Multi-purpose numeric keys**

(68) **VPS/channel button (VPS/KANAL)**

(69) **CURSOR/TV PR. buttons**

(70) **Video programme button (VIDEO AUFZ. NR.)**
Press to programme the recorder's timer memory directly from the remote control.

(71) **Video cancel button (VIDEO LÖSCHEN)**
Press to cancel the programmed data held in the recorder's timer memory.

(72) **SP/LP button**

(73) **Intro button (TITELBILD)**
Press to engage the Intro Search mode. (See page 55.)

(74) **INDEX button**
Press to engage the Index Search mode. (See page 53.)

(75) **Go-to button (ZIELLAUF)**
Press to engage the Go-To mode. (See page 54.)

(76) **Rewind and Fast Forward buttons (◀◀ / ▶▶)**

(77) **Variable search button (VARI-SUCHLAUF)**

(78) **Record button (●)**
Press together with the play button (79) to start recording.

(79) **Play/x2 button (▶ /x2)**

(80) **Pause/Still button (❚❚)**

(81) **Stop button (■)**

Note:
Several buttons on the remote control unit have additional functions (as suggested by additional labels). For those functions refer to the "Handy Teletext & VPV Operation Guide" accompanying this instruction manual.

Remote Control Unit

A/B mode switching

A switch on the back of the remote control labelled A/B is accessible when the battery compartment cover is removed.

- This switch is preset to the "A" position. Do not touch it unless you use two JVC video decks side by side.
- When you place two JVC video decks near each other, use this remote control in the "B" mode to prevent both decks from responding simultaneously to this remote control's signals. For this purpose, carefully follow the instructions below:
  (1) Unplug the power cord of the HR-S5000EG from the AC outlet.
  (2) Set the remote control unit's A/B mode switch to "B".
  (3) Plug the power cord of the HR-S5000EG into the AC outlet.
  (4) Turn on the power of the HR-S5000EG using the remote control's BETRIEB (VIDEO) button.
  - The HR-S5000EG "memorises" this B code and then will respond only to the signals of this remote control unit. The other deck will respond only to its remote control.

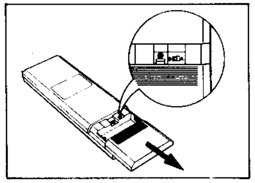
    Note:
    Do not operate other remote controls after you have plugged the HR-S5000EG into the AC outlet and before you press the BETRIEB (VIDEO) button of this remote control.

Operating distance for remote control unit

- The maximum operating distance is about 8 m.

Installing the batteries

- Insert two "R6"-size batteries (provided) into the battery compartment on the rear of the remote control unit, observing correct polarity.



Rear Panel

(82) **AC outlet**
Connect the power cord of other audio or video equipment (such as an FM tuner) requiring less than 2 A of current. This outlet is controlled by the NETZAUSGANG switch ●.

(83) **A/V input/output connector (A/V1 EING./AUSG.)**
A 21-pin standardised (peri) audio/video input/output socket for the connection to a TV or a 2nd video recorder equipped with the same type of socket. The input from this socket can be recorded with the EINGANGS-WAHL switch ● set to AV1 in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display). The output signal format (separated luminance and chrominance signals or composite video signal) can be selected with the AV1 VIDEO-AUSG. switch ●.

(84) **A/V input connector (A/V2 EING.)**
A 21-pin audio/video input socket for the connection to a 2nd video recorder or VideoMovie for dubbing. The input from this socket can be recorded with the EINGANGS-WAHL switch ⑰ set to AV2 in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display).

(85) **Audio input connectors (AUDIO EING.)**
Connect an audio tape recorder or other audio sources for recording sound onto the hi-fi audio track.

(86) **S input connector (S EING.)**
A special S-VIDEO input connector (4-pin). To record 2nd video recorder or VideoMovie for dubbing. The input from this socket can be recorded with the EINGANGS-WAHL switch 17 set to AV2 in the AUX mode (engaged by pressing the numeric key "0" to obtain "AU" in the channel display).
EINGANGS-WAHL switch ● to S.

(87) **VPV connector**
Connect the provided VPV adapter for viewing teletext broadcasts or programming the timer through use of teletext services. (See page 39.)

(88) **Aerial input connector (ANTENNEN EINGANG)**
Connect an aerial to this connector.

(89) **Attenuator switch (ANT. SIGN.)**
Set to SCHWACH to receive broadcasts from distant stations. Set to STARK to receive broadcasts of high field strength.

(90) **TEST signal switch**
Set to EIN when tuning your TV receiver for the video channel. A test signal in the form of two vertical white bars will be available.

(91) **RF converter frequency adjustment screw (K40 – K32)**
See page 42.

(92) **RF output connector (HF AUSGANG)**
Connect to the aerial terminal of a TV receiver through the aerial cable (provided).

(93) **Vertical lock control (V-BILDFANG)**
Turn this control to eliminate vertical jitters in the Still mode.

(94) **S output connector (S AUSG.)**
A special S-VIDEO output connector (4-pin). Connect to the S-VIDEO input terminal of a 2nd S-VHS video recorder or a television equipped with the same type of terminal, using the provided S-VIDEO cable.

(95) **Remote pause control terminal (PAUSE FERNBEDIENUNG)**
When using a JVC video camera, connect the remote control cable of the camera adapter to this terminal for the purpose of controlling the starting and stopping of the tape with the camera's start/stop switch.

(96) **Audio output connectors (AUDIO AUSG.)**
Both hi-fi and normal audio signals can be obtained from these connectors. The output can be selected with the AUDIO MONITOR button (●, ●) and the AUDIO MIX button ●.

(97) **Power cord**

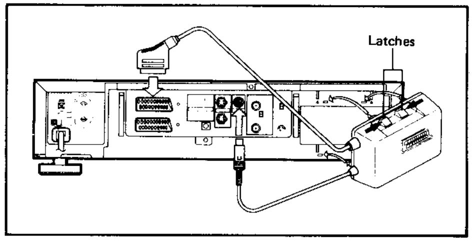
CONNECTIONS

VPV adapter connection

A VPV (Videotext-Programmed Video recorder) adapter is provided with the HR-S5000EG. By connecting this adapter to the rear panel, the HR-S5000EG permits viewing teletext information in several page access modes and lets you programme the timer or adjust the clock, automatically or manually, using the on-screen display. Referred to as VPV functions, all necessary information regarding the additional functions is included in a handy booklet supplied together with this instruction manual.

Caution:
Before connecting or disconnecting the VPV adapter, be sure to turn the video recorder's power off.

To use VPV functions, first connect the VPV adapter as illustrated: Insert the two lower hooks of the adapter into the lower slots of the recorder, and then the two upper hooks into the upper slots while squeezing the latches together. Insert the 21-pin peri-connector plug into the recorder's A/V1 EING./AUSG. connector and the 8-pin plug into the recorder's VPV connector. Once the VPV adapter is connected, the *adapter's 21-pin peri-connector functions in place of the recorder's* the A/V1 EING./AUSG. connector.
Therefore, throughout this instruction manual, in cases when the VPV adapter is connected to the recorder, the "A/V1 EING./AUSG. connector" refers to the VPV adapter's 21-pin connector.



Aerial connection

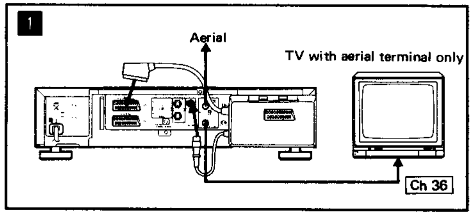
Remove the aerial cable from the TV receiver and reconnect it to the ANTENNEN EINGANG terminal of the recorder.

TV connection

For flexibility, the HR-S5000EG has a pair of S-VIDEO connectors (S EING. and AUSG.), and two 21-pin A/V peri-connectors. The S-VHS signal is composed of separated Y/C (luminance/chrominance) signals, while the regular video signal is a composite video (FBAS) signal in which the luminance and chrominance signals are mixed.
One of the 21-pin A/V connectors (A/V1 EING./AUSG.) is an input/output connector which accepts the separated Y/C or composite video signal (and audio) and delivers either the separated Y/C or the composite video signal depending on the setting of the AV1 VIDEO-AUSG. switch ●. The other 21-pin A/V connector (A/V2 EING.) is an input connector which accepts either the separated Y/C or composite video signal. The 4-pin S EING. and S AUSG. connectors are exclusively for the separated Y/C signals; use the provided S-VIDEO cable when using these connectors.
Depending on the type of your television, choose one of the connecting methods shown here. The accompanying numbers indicate ranking of the available picture quality: The larger the number, the higher the picture quality. To take best advantage of S-VHS pictures, it is recommended that you choose ■, ■, or ■.

(1) RF connection

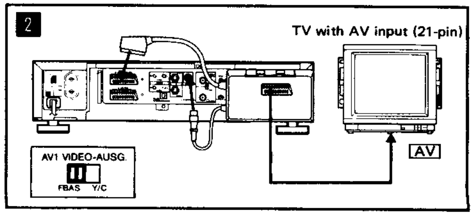
Connect the HF AUSGANG terminal of the recorder to the aerial terminal of the television using the provided aerial cable. Both video and audio (monaural) signals are fed to the television and their resulting pictures can be viewed by setting the television to your video channel (see page 42). This RF connection must be done in all other cases too, because the aerial signal is fed to the television via the HF AUSGANG terminal when viewing television programmes or when recording one programme while watching another.



(2) 21-Pin connection

(a) AV connection

Connect the A/V1 EING./AUSG. connector of the recorder (or VPV adapter's 21-pin connector) to the AV IN connector of the television. Both video and audio (stereo) signals are fed to the television and their pictures and sound can be viewed and listened to by setting the television to the AV mode. The AV1 VIDEO-AUSG. switch ● must be set to FBAS.



CONTROLS, INDICATORS AND CONNECTORS

Refer to diagrams on the front foldout page.

Front Panel

① **Headphone jack (KOPFHÖRER)**

② **Headphone volume control (KOPFHÖRER PEGEL)**
Adjusts the level of the audio output from the headphone jack.

③ **Operate button with LED indicator (BETRIEB)**
Press to apply operating power to the recorder. The indicator will light. Loading a cassette also turns the power on.

④ **Cassette loading slot**
Insert a VHS or S-VHS cassette. The door will close and the indicator showing that a cassette is inside will appear on the FDP (fluorescent display). With an S-VHS cassette, the S-VHS KASS. indicator ⑥ will also light.

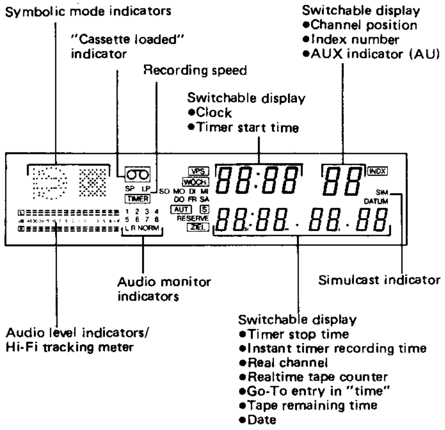
⑤ **S-VHS mode indicator**
The "S-VHS" indicator illuminates when the S-VHS recording mode is selected with the S-VHS mode select button ㉕, or when S-VHS recordings are being played back. In playback, S-VHS recordings are automatically detected and played back in the S-VHS mode.

⑥ **S-VHS cassette indicator (S-VHS KASS.)**
Lights when a cassette marked S-VHS is inserted.

⑦ **STEREO indicator**
Lights when a stereo programme is being received.

⑧ **Bilingual indicator (2-TON)**
Lights when a bilingual programme is being received.

⑨ **Fluorescent display panel (FDP)**



⑩ **Index mark indicator (INDEX MARKE)**
Blinks when an index code is being recorded.

⑪ **Index erase indicator (INDEX LÖSCHEN)**
Lights in the Erase mode, and blinks when an index code is actually being erased.

⑫ **Infrared beam receiving window**

⑬ **Microphone jack (MIKROFON)**

⑭ **AC online switch (NETZAUSGANG)**
AUS : Power is available from the rear panel AC outlet regardless of whether the recorder is on or off.
EIN : Power is available from the rear panel AC outlet only when the recorder is on. When used in combination with the built-in timer, this enables timer-controlled power supply for the connected equipment.

⑮ **EDIT switch**
Normally set to AUS. For making multi-generation dubs, set it to the EIN position.

⑯ **Audio/Video output switch (AV1 VIDEO-AUSG.)**
Selects the signal output via the 21-pin A/V1 EING./AUSG. connector (83).
Y/C : Set to this position when delivering the S-VHS signal (Y/C separated video signal) to equipment connected to the A/V1 EING./AUSG. connector. (See page 40.)
FBAS : Set to this position when delivering the ordinary video signal to equipment connected to the A/V1 EING./AUSG. connector. (See page 39.)

⑰ **Auxiliary input select switch (EINGANGS-WAHL)**
Selects the connection for external source recording.
AV1 : Set to this position when recording an input applied to the 21-pin A/V1 EING./AUSG. connector (83).
AV2 : Set to this position when recording an input applied to the 21-pin A/V2 EING. connector (84).
S : Set to this position when recording an input applied to the S EING. connector (85).

⑱ **Bilingual switch (2-KANAL TON)**
HAUPT: To record the main soundtrack (local language).
NEBEN: To record the sub soundtrack (foreign language).
See pages 45 and 52.

⑲ **Automatic level control switch (AUDIO-BEGRENZER)**
Set to AUS when adjusting the hi-fi audio recording level manually.

⑳ **Level indicator switch (PEGELANZEIGE)**
Selects the function of the audio level indicators. See page 46.

㉑ **Hi-Fi audio recording level controls (Hi-Fi AUFN.)**
Use to adjust the hi-fi audio recording level, referring to the audio level indicators on the FDP. See page 46.

㉒ **Tracking controls (SPURLAGE -/+)**
If noise bars are seen during playback (normal or slow), use these buttons to reduce them. The tracking is reset to standard when both buttons are pressed together, the cassette ejected, or the power turned off.

㉓ **Picture sharpness control (BILDSCHÄRFE)**
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect for recording.)

㉔ **Eject button (KASSETTE)**

㉕ **S-VHS mode select button**
This button switches between S-VHS and VHS recording modes. When the S-VHS mode is selected, the S-VHS indicator ⑤ illuminates. S-VHS recordings are possible only when S-VHS cassettes are used in the S-VHS recording mode.

㉖ **AUDIO MONITOR button**
Each time this button is pressed, the audio channel to be output changes and is indicated by the L and R indicators on the FDP.

㉗ **AUDIO MIX button**
Press to select for listening to either the hi-fi or normal soundtracks or to a mixture of the two.

㉘ **Simulcast button (SIMUL)**
Press to record the video signal and normal audio signal from the built-in tuner and the hi-fi audio signal from the rear panel AUDIO EING. connectors. "SIM" will appear on the FDP. When recording FM simulcast TV programmes, use this setting.

㉙ **Counter memory button (ZÄHLWERK-SPEICHER)**
When this button is pressed, S will appear on the FDP and the tape will stop automatically at the counter reading of about "0St 00m 00s" in the Rewind or Fast Forward mode.

㉚ **Counter reset button (ZÄHLWERK-RÜCKST.)**
Press to reset the tape counter reading to "0St 00m 00s".

㉛ **SP/LP button**
Press to select the recording mode (SP or LP).

㉜ **Display button (ANZEIGE)**
Press to change the display from the Timer Set mode to the Clock mode. Usually use this button to switch the display to realtime tape counter, remaining tape time (RESERVE) and date (DATUM).

㉝ **Clock adjust button (UHR-EINSTELLUNG)**
Press to adjust the clock.

㉞ **Channel set/VPS button (KANAL/VPS)**
A dual-function button. Serves as a VPS command enter button in timer programming (See page 59.)
Normally functions to engage the Real Channel mode (See page 43.)

㉟ **Programme button (AUFZ. NR.)**
Press to programme the timer.

㊱ **Channel (∨ / ∧) (Back/Next) buttons (KANAL) (ZURÜCK/VOR)**
Press either button to scan to a desired channel. These buttons can also be used as cursor keys for 10-key programming.

㊲ **Channel search button (KANAL-SUCHLAUF)**
Press to initiate automatic scan tuning in the Real Channel mode. (See pages 43 and 44.)

㊳ **Timer button (SCHALTUHR)**
Press to engage the Timer Recording Standby mode.

㊴ **Fine (-, +) buttons (FEIN)**
To fine-tune in to a certain station by shifting the frequency in both directions. (See page 44.)

㊵ **Cancel/Skip button (LÖSCHEN/ÜBERSPRINGEN)**
A dual-purpose button. Use to clear the programmed data in the Timer Set mode or skip unnecessary channels in the Channel Set mode. (See page 58 or 44.)

㊶ **Store button (SPEICHERN)**
Press to store necessary channels. (See page 44.)

㊷ **Go-to button (ZIELLAUF)**
Press to engage the Realtime Go-To mode. See page 54.

㊸ **Multi-purpose numeric keys**

Channel selection:	See page 44.
Clock setting:	See page 42.
Timer programming:	See pages 57 and 58.
Realtime Go-To:	See page 54.
Index Search:	See page 53.
External source recording:	See page 61.

㊹ **Audio dub button (VERTONUNG)**
Press while in the Still mode, then press the WIEDERGABE/x2 button for audio dubbing. (See page 56.)

㊺ **Record/Instant Timer Recording button (AUFN./DA)**
Press once to start recording. Pressing it again engages the Instant Timer Recording mode. See page 51.

㊻ **INSERT button**
Press this button for insert editing. See page 60.

㊼ **Fast Forward/Shuttle Search button (VORLAUF)**
To fast forward the tape, press this button while in the Stop mode. To view the speeded-up picture in the forward direction for programme search, use this button while in the Play mode.

㊽ **Pause/Still button (PAUSE/STANDB.)**
Press to stop the tape temporarily to avoid recording of unwanted material or to view a still picture. The still picture can be advanced step by step.

㊾ **Play/x2 button (WIEDERGABE/x2)**
Press once to play back the tape; press again for double-speed playback. Also press this button to cancel the Pause/Still, Slow and Search modes.

㊿ **Rewind/Shuttle Search button (RÜCKLAUF)**
To rewind the tape, press this button while in the Stop mode. To view the speeded-up picture in the reverse direction for programme search, use this button while in the Play mode.

(51) **Variable-speed search buttons (VARI-SUCHLAUF)**
Press either the "≪" or "≫" button to search for a specific segment of the programme at variable speeds. To cancel the variable-speed Search mode, press the WIEDERGABE/x2 button. For more details see page 50.

(52) **STOP button**
Press to stop the tape.

(53) **Index mark/erase buttons (INDEX MARKE/LÖSCHEN)**
Press MARKE during playback or recording to put an index code on the tape. (See page 53.)
Press LÖSCHEN during playback to erase an index code. (See page 53.)

Remote Control Unit

TV Operation buttons (Designated JVC TV models only.)

● **MONITOR TV/VIDEO button**
Press to select the TV's operating mode: TV for viewing broadcast programmes or tape programmes via HF AUSGANG connection, and VIDEO for viewing programmes via A/V1 EING./AUSG. connection.

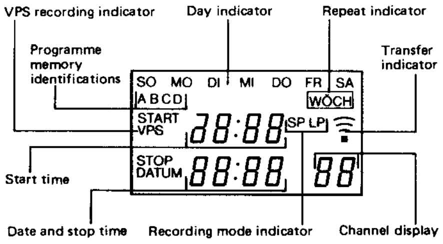
● **Operate (TV) button (BETRIEB (TV))**
Press to turn the TV power on or off.

● **TV channel buttons (TV-KANAL)**
Press to select a desired channel on the TV receiver.

● **TV volume buttons (TV-LAUTSTÄRKE)**
Press "-" or "+" to decrease or increase the TV's sound volume.

● **Operate (video) button (BETRIEB (VIDEO))**
Press to turn the recorder power on or off.

● **LCD (Liquid Crystal Display) panel**
Refer to this panel when programming the remote control's built-in timer memory.



● **Menu/Text button (MENÜ/TEXT)**
Refer to the "Handy Teletext & VPV Operation Guide" accompanying this instruction manual.

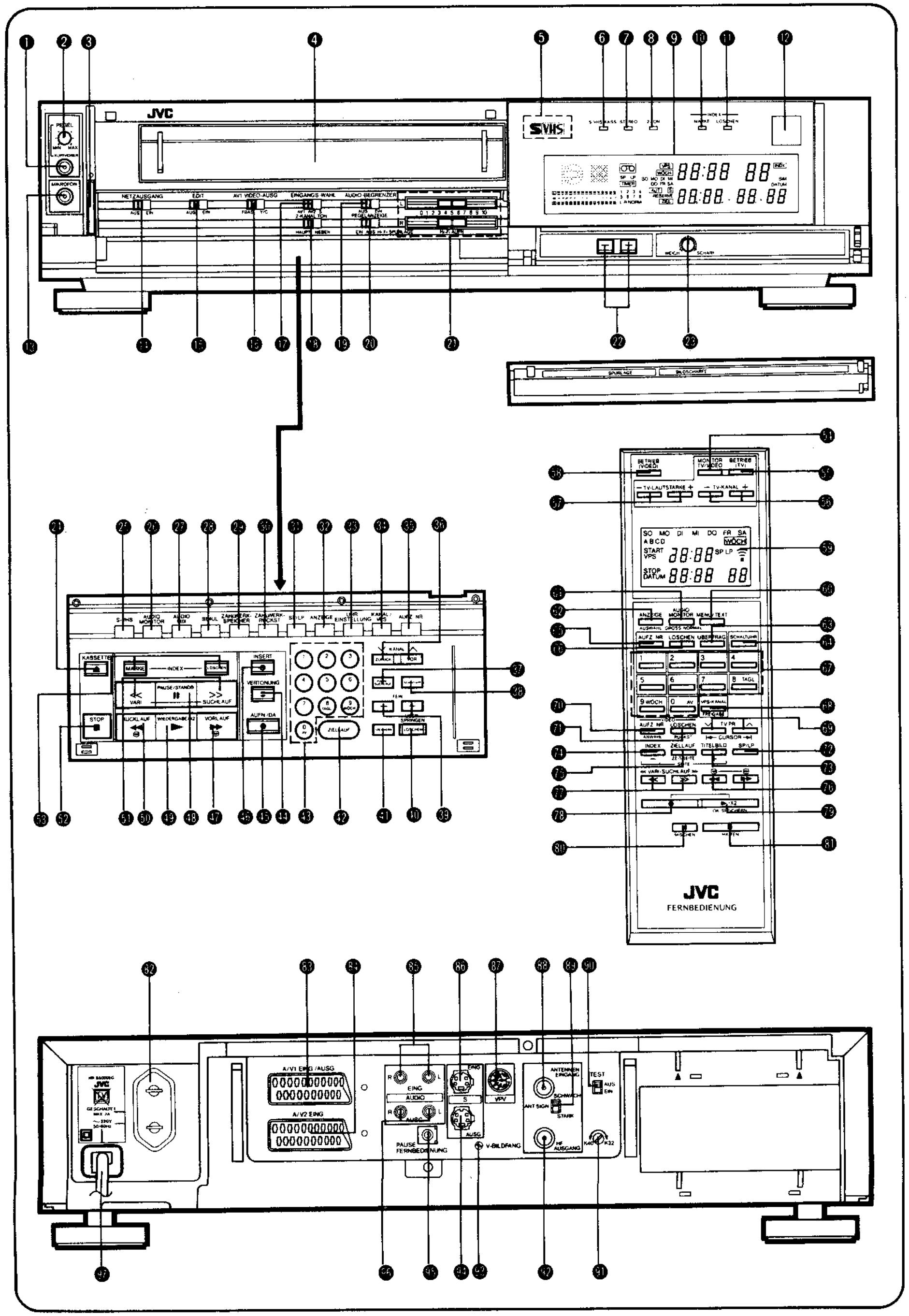
● **AUDIO MONITOR button**

● **Display button (ANZEIGE)**

● **Transfer button (ÜBERTRAG)**
Press to transfer the data held in the memory to the recorder.

● **Timer button (SCHALTUHR)**

BEDIENUNGSANLEITUNG


JVC
S-VHS
NETZAUSGANG
EDIT
AV1 VIDEO-AUSG
EINGANGS-WAHL
AUDIO BEGRENZER
KASSETTE
INDEX
PAUSE/STANDB
STOP
INSERT
VERTONUNG
AUFN/IDA
ZIELLAUF
FERNBEDIENUNG
A/V1 EING/AUSG
A/V2 EING
EING
AUDIO
VPV
ANTENNEN EINGANG
TEST
PAUSE FERNBEDIENUNG
V-BILDFANG
HF AUSGANG

CONTENTS

Features 34
Precautions 35
Controls, indicators and connectors 36
Connections 39
For a better understanding of S-VHS and VHS 41
Video channel setting 42
Clock setting 42
Operating the built-in tuner 43
Information on the HR-S5000EG's audio system 45
Loading and unloading a cassette 48
Playing back a video cassette 49
Special-effects playback 50
Basic operation for recording TV programmes 51
Other recording possibilities 52
Index search function 53
Realtime tape counter functions 54
Counter memory function/lap time indication 55
Remaining tape time indicator 55
Intro search function 55
Next-function memory 56
Audio dubbing 56
Automatic timer recording 57
VPS recording 59
Insert editing 60
Recording from an external source 61
In case of difficulty 61
Head cleaning 62
Specifications 63

ENGLISH

SAFETY PRECAUTION

The rating plate and the safety caution are on the rear of the unit.

WARNING – DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:

Blue to N (Neutral) or Black
Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt – consult a competent electrician.

CAUTION

- When you are not using the HR-S5000EG for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

Cassettes marked "S-VHS" and "VHS" can be used with this video cassette recorder. However, S-VHS recordings are possible only with cassettes marked "S-VHS".

625

FOR YOUR SAFETY (in Australia)
Install any external aerial to AS 1417.1

Omkopplaren BETRIEB på denna apparat är sekundärt kopplad och skijer inte apparaten från nätet i läge BETRIEB AUS.

The BETRIEB button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling AUS er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skai netledningen trækkes ud.

This unit is produced to comply with Directive 82/499/EEC, CISPR Pub. 13 and Pub. 14 and Standard IEC 65.

Video tapes recorded with this video recorder in the LP (Long Play) mode cannot be played back on a single-speed video recorder.

COPYRIGHT © 1988 VICTOR COMPANY OF JAPAN, LTD.
Printed in Japan

FEATURES

High-quality pictures

- ●Super VHS recording and playback circuitry ensuring super-quality pictures with a horizontal resolution of more than 400 lines.
- ●Separated Y/C signal inputs and outputs for higher quality dubbing and playback of Super VHS signals (4-pin S EING. and S AUSG., and two 21-pin peri-connectors; one for input/output, and the other for input.)
- ●HQ (High Quality) System circuits (Detail Enhancer, Luminance Signal Noise Reduction, and 20 % higher white clip level) to ensure the best possible pictures in the regular VHS mode.
- ●Super DA-4 head system for superlative picture quality in all modes in both SP (Standard Play) and LP (Long Play).
- ●Flying erase head and insert editing circuit for professional-class insert edits.
- ●Edit switch for best possible dubs.
- ●Picture sharpness control.

High-quality sound

- ●Conforms to the Hi-Fi VHS standard for superlative stereo sound with a dynamic range of more than 90 dB.
- ●Advanced switching noise reduction circuit.
- ●Hi-Fi recording level controls with ALC switch.
- ●Peak-hold audio level indicators/Hi-Fi tracking meter.
- ●Audio dubbing facility.
- ●Headphone jack with output level control.

Special-effects playback

- ●Noiseless stills and frame advance.
- ●Variable-speed slow motion at 1/6, 1/12, 1/18, 1/24 and 1/30 normal speed.
- ●Variable-speed search at 3,5, and 9 times normal speed in both directions.
- ●Double-speed forward playback and normal-speed reverse playback.

Tuner features

- ● Frequency synthesized wide-band cable tuner with 48-channel storage capacity.
- ●Pretuned to European television broadcast frequencies: VHF, UHF and cable channels.
- ●Sound-Multiplex capability for recording stereo and bilingual broadcasts.
- ●10-Key random-access channel selection and up/down scanning.

Timer features

- ●1-Year/8-event 10-key programmable timer.
- ●Teletext programming through use of the provided VPV adapter.
- ●VPS recording with built-in VPS decoder.
- ●Remote programming by data transfer.
- ●Direct VCR timer programming.
- ●Instant timer recording.

Remote control features

- ●Independent timer programming with built-in LCD and 4 programme memories.
- ●Full control for teletext programming and viewing.
- ●10-Digit keypad for timer programming, teletext page setting, channel selection, Index Search and Go-To functions.
- ●TV control for power on/off, volume, channel and AV mode selection (Designated JVC TVs only).

Tape access features

- ●VHS Index Search System which automatically places index codes at the beginning of any recording, with mark/erase facilities for manual marking of extra index codes during recording and playback, and manual erasing of unnecessary index codes during playback.
- ●Automatic location of up to 9 coded programmes by remote-specifying the number of index codes to be skipped. A specified code can be detected in the Shuttle Search, or the faster REW and FF modes for automatic playback.
- ●Intro search to play back the beginning of each indexed programme for about 5 seconds in fast-motion.
- ●Realtime go-to function for locating a point on tape a specified time away from the beginning.
- ●Realtime search function for locating a point on tape a specified time away from the current position in either direction.
- ●Half-loading mechanism for quick tape access: Index and Intro Search, and Realtime Go-to and Search can all be carried out in the REW and FF modes as well as in the Shuttle Search mode.
- ●Counter memory function for returning to a designated point on tape.
- ●Shuttle Search with lock function at 9 times normal speed.

Other value features

- ●Realtime tape counter showing tape time in hours, minutes and seconds by counting the recorded 25-Hz control signal pulses.
- ●Automatic functions including Auto Play and Next-Function Memory.
- ●Automatic backspace editing with Zero Frame Editing system.
- ●Remaining tape time indicator.
- ●On-screen record-pause mode display which signals elapsed pause time.
- ●Electronic tracking controls.
- ●Switchable AC outlet.

PRECAUTIONS

Handling and storage

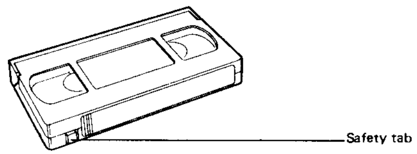
- ●Avoid using the recorder under the following conditions:
  - – extremely hot, cold or humid places,
  - – dusty places,
  - – near appliances generating strong magnetic fields,
  - – places subject to vibrations, and
  - – poorly ventilated places.
- ●Be careful of moisture condensation.
  Avoid using the recorder immediately after moving from a cold place to a warm place or soon after heating a room which was cold. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- ●Handle the recorder carefully.
  - ● Do not block the ventilation openings.
  - ● Do not place anything heavy on the recorder.
  - ● Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - ● Use in horizontal (flat) position only.
- ●In case of transportation,
  - ● Avoid violent shocks to the recorder during packing and transportation.
  - ● Before packing, be sure to remove the cassette from the recorder.

Video cassettes

- ●This recorder employs S-VHS and VHS cassettes only.

S-VHS: SE-180 for 3 hours/6 hours, SE-60 for 1 hour/2 hours and SE-30 for 30 minutes/1 hour of recording.
VHS: E-240 for 4 hours/8 hours, E-180 for 3 hours/6 hours, E-120 for 2 hours/4 hours, E-90 for 1 hour and 30 minutes/3 hours, E-60 for 1 hour/2 hours and E-30 for 30 minutes/1 hour of recording.

- ●Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



- ●Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- ●Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- ●Place the cassettes in cassette cases and position vertically.

Moisture condensation

- ●If you pour a cold liquid into a glass, water vapour in the air will condense on the surface of the glass. This is called moisture condensation.
- ●Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- ●Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, after heating a cold room or under extremely humid conditions.
- ●In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the power switched on; this will help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

Remote control unit

- ●Avoid violent shocks, especially take care not to drop the unit.
- ●Take care not to allow liquid to spill into the unit.
- ●Do not place heavy objects on the unit.
- ●Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

WARNING

Regarding VHS recordings:

1. This recorder can also receive SECAM colour television signals for recording and playback.
2. Recordings made of SECAM television signals produce monochrome pictures if played back on another video recorder of SECAM standard, or do not produce normal colour pictures if played back on another video recorder of PAL standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used in France. Use a SECAM recorder to record French SECAM signals in France.

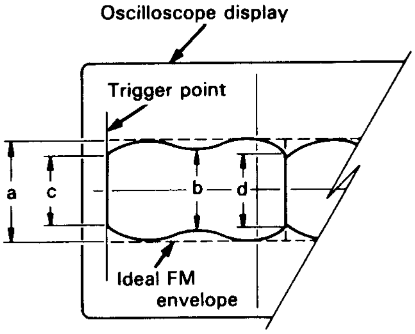
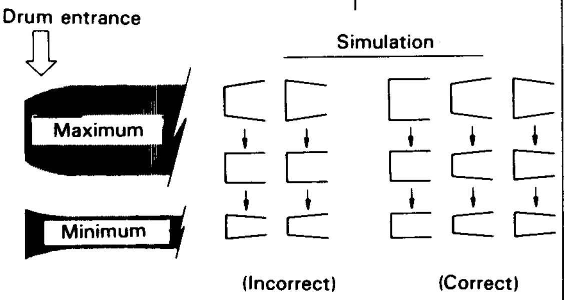
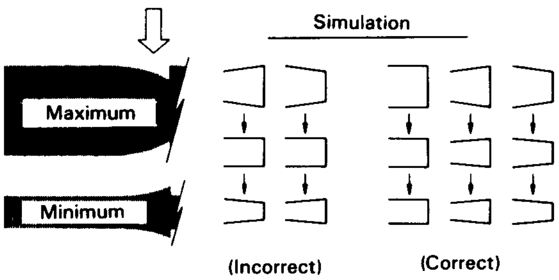
Regarding S-VHS recordings:

Since the S-VHS Euro System is a unified standard, S-VHS recordings are the same regardless of whether the original signal is PAL or SECAM. However, this recorder operates only in the VHS mode for recording a SECAM signal.

1. S-VHS recording is not possible when the input signal is SECAM.
2. When this is attempted, the S-VHS indicator goes off and the VHS recording circuit is automatically engaged.
3. The resulting tapes have the same limitations as described in "Regarding VHS recordings".

IMPORTANT: It is permissible to record television programmes only in the event that third party copyrights and other rights are not violated.

1.6 INTERCHANGEABILITY CHECKS AND ADJUSTMENTS

No.	Item	Adjustment parts	Operating mode	Description
	Before using costly Alignment tape, use a spare tape and confirm correct operation of the tape transport.			
1	FM waveform $\frac{b}{a} \geqq 0.7, \frac{c}{a} \geqq 0.5$ and $\frac{d}{a} \geqq 0.5$  Oscilloscope display Trigger point a c b d Ideal FM envelope **Fig. 1-6-1** FM envelope  Drum entrance Simulation Maximum Minimum (Incorrect) (Correct) **Fig. 1-6-2** Drum entrance  Drum exit Simulation Maximum Minimum (Incorrect) (Correct) **Fig. 1-6-3** Drum exit			1) Connect oscilloscope to the FM OUT testpoint of the video playback circuit. Trigger the oscilloscope externally with the signal from the drum flipflop (D-FF or FF) testpoint. Set the trigger slope to minus (−). 2) Play the MH-2 Alignment tape and adjust the tracking for maximum FM waveform output. Refer to Fig. 1-6-1. Confirm the relationships indicated in the figure for maximum output (a), minimum center output (b), minimum output at the drum intake (c) and minimum output at the drum output (d). 3) Adjustment is required if the above specifications are not fulfilled. Even when these are fulfilled, check that the FM waveform varies linearly overall. If not, slight deviation in tracking will cause a large proportional level drop to result in noise appearing in the picture. Therefore, in this condition, proceed to the following checks and perform adjustments where necessary. 4) Operate the tracking adjustment between minimum and maximum outputs of the FM waveform. Observe the portion of the waveform corresponding to the drum intake (see Fig. 1-6-2). As the tracking is adjusted, although the gain may increase or decrease, the geometric shape of this part of the waveform should remain consistent. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the supply guide roller height. 5) Next observe the portion of the waveform corresponding to the drum output (see Fig. 1-6-3), while operating the tracking adjustment. This should also vary only in gain, but not in shape. If the shape varies, as shown by the incorrect examples in the figure, carefully perform adjustment of the take-up guide roller height. 6) Check the overall FM waveform. Fine-adjust both guide rollers so that variation is as minimum and linear as possible. 7) Observe the tape travel at the guide rollers and guide poles. Confirm absence of tape creasing or curling. Confirm that the tape properly rides at the lower flange of the supply guide pole. Carefully adjust the guide pole height if necessary. This adjustment is important and affects FM waveform response. If creasing or curling is observed at the take-up guide pole, carefully adjust the audio/control head inclination so that the tape rides properly at the lower flange of the guide pole. Finally, again check the FM waveform.

<table>
<tr><th>No.</th><th>Item</th><th>Adjustment parts</th><th>Operating mode</th><th>Description</th></tr>
<tr><td rowspan="2">2</td><td colspan="4">Proper adjustment of the A/C head position is important for ensuring adequate audio output and S/N. Severe misalignment can prevent control signal pick-up and cause servo instability. Precise adjustment is particularly important for models that include tape indexing and addressing features, since these rely on control signal coding for operation.
To observe the audio signal, connect an oscilloscope to the test point (AUDIO OUT) of the audio circuit, or directly to the audio output terminal. In some cases, monitoring the sound with headphones may be helpful.</td></tr>
<tr><td colspan="3">A/C head adjustments

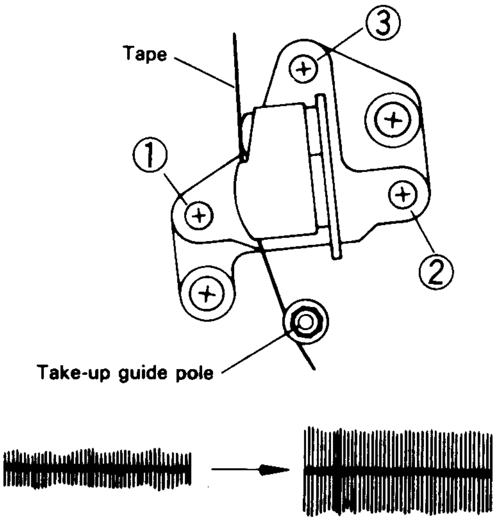
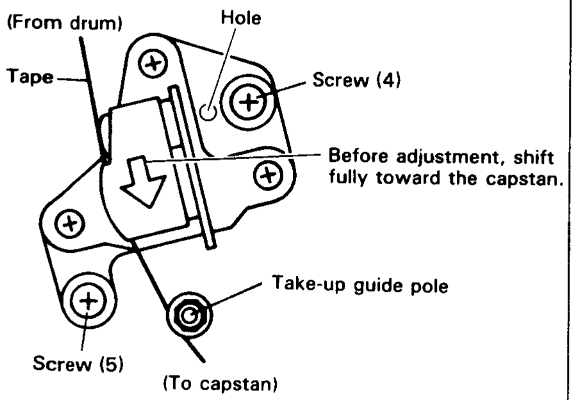



Fig. 1-6-4 A/C head</td><td>1) Play the stairstep (audio 6 kHz) portion of the MH-2 Alignment tape.
2) Adjust screw (3) (Fig. 1-6-4), which is the azimuth adjustment, for maximum output.
3) Turn screws (1), (2) and (3) by small and equal increments (about 45° at a time) to adjust the A/C head height for maximum audio output. Slightly raise and lower the height to confirm the maximum output position.
4) Observe the FM waveform and tighten the guide roller setscrews. Use care not to disturb the height adjustments. Then again confirm the FM waveform.</td></tr>
<tr><td rowspan="2">3</td><td colspan="4">This determines the distance between the sound and picture information on the tape. Correct adjustment is important for providing synchronization of picture and sound in the program. Incorrect adjustment is particularly noticeable in the slow speed (LP) mode.
Observe the FM waveform by connecting an oscilloscope to the video play-back circuit test point (FM OUT). Trigger the oscilloscope externally with the drum flipflop signal. Use plus (—) trigger to view the CH1 waveform. Set the tracking adjustment to the neutral (AUTO) position.</td></tr>
<tr><td colspan="3">Control head phase (X value)


(From drum)
Hole
Tape
Screw (4)
Before adjustment, shift fully toward the capstan.
Take-up guide pole
Screw (5)
(To capstan)

Fig. 1-6-5 Control head phase</td><td>1) Play the stairstep portion of the MH-2 Alignment tape.
2) See Fig. 1-6-5. Slightly loosen screws (4) and (5). Set the A/C head positioning tool over screw (4) with the pin of the tool inserted into the indicated hole.
3) Turn the tool counterclockwise to shift the A/C head fully toward the capstan direction.
4) While observing the CH-1 FM waveform, gradually turn the tool clockwise. Stop at the peak output position and tighten screw (5). Remove the tool and tighten screw (4).
5) Replace alignment tape MH-2L with MH-2L, play back the stairstep segment of the alignment tape MH-2L.
6) Operate the tracking adjustment and confirm that the maximum FM waveform is obtained at the neutral setting.
7) If the FM output peak is not obtained at tracking neutral position, shift the A/C head at the FM output peak nearest to this position.</td></tr>
</table>

No.	Item	Adjustment parts	Operating mode	Description
4	Final checks			1) Supply a video or TV signal (monochrome is preferable). Use a spare tape and record and play back. Confirm that the playback FM signal conforms to the parameters indicated in Fig. 1-6-1. Check for both SP and LP modes. 2) Connect the oscilloscope to the test point (FM OUT) of the FM audio play-back circuit. Play the stairstep portion (which includes the FM audio carrier) of the MH-2L Alignment tape. Confirm absence of severe drop in FM waveform level. 3) Perform the checks and, if necessary adjustments, of the Electrical Adjustments Section for the servo, video and audio (and FM audio) circuits.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Vectorscope
5. Audio oscillator
6. Audio voltmeter
7. Digital voltmeter
8. Signal generator: RF/IF sweep/marker
9. Signal generator: PAL color bar, stairstep, video sweeper
10. Signal generator: Audio multiplex TV signal generator
11. Recording tape
12. Alignment tape: MH-2, MH-2H
13. RCA-S adapter: PTU93001A
14. Patch cord: PTU94001
    (PRE/REC board to CONNECTOR board)
15. Extension cable: PTU93004A
    (AV IN OUT board to MECHACON board
    SERVO board to MECHACON board)
16. Head resonance adjust coil : PTU94004A
17. Extension wire : PTU94005B

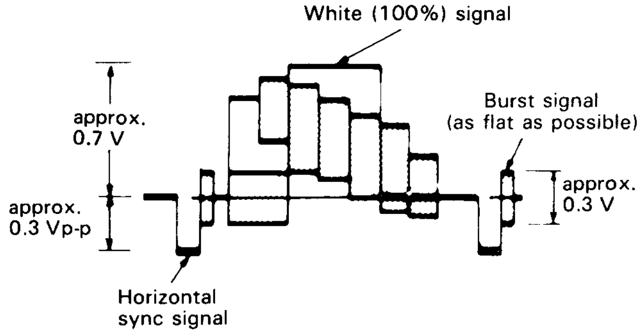

White (100%) signal
Burst signal
(as flat as possible)
approx.
0.7 V
approx.
0.3 Vp-p
approx.
0.3 V
Horizontal
sync signal

Fig. 2-1-1 Color bar signal of pattern generator

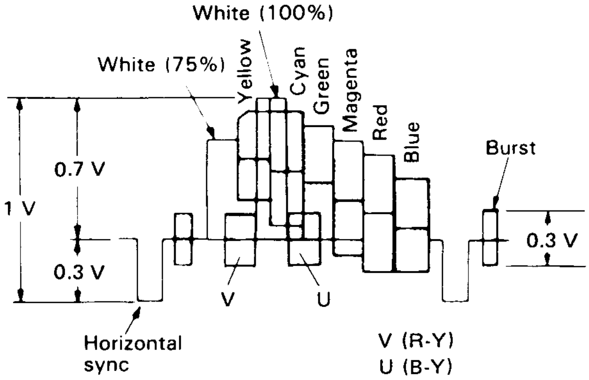

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal
sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 Color bar signal waveform

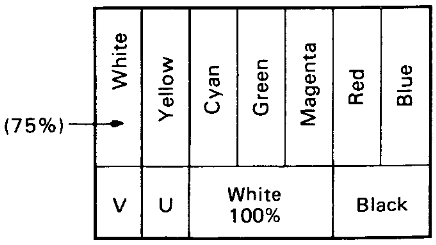

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White
100%
Black

Fig. 2-1-3 Color bar pattern

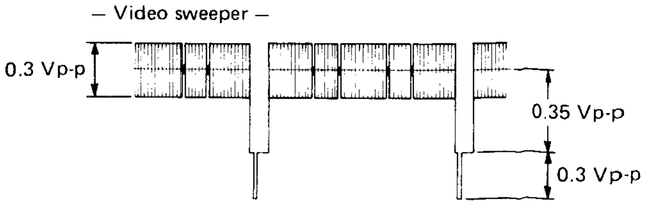

— Video sweeper —
0.3 Vp-p
0.35 Vp-p
0.3 Vp-p

Fig. 2-1-4 Input signal level for video sweeper

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (–) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (–) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.

Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
MH-2L color bars	Color bars segment of MH-2L alignment tape.
MH-2L stairstep	Stairstep segment of MH-2L alignment tape.
MH-2L RF sweep	RF sweep segment of MH-2L alignment tape.
MH-2H color bars	Color bars segment of MH-2H alignment tape.
MH-F2 stairstep	Stairstep segment of MH-F2 alignment tape.
MH-F2 1 kHz	1 kHz FM audio signal segment of MH-F2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
A DUB	Audio dubbing mode
SP mode	SP recording speed
EP mode	EP recording speed
LP mode	LP recording speed
S-VHS mode (S mode)	Super-VHS recording mode

Description	This column provides an explanation of the step, notes and adjustment values.

2.2 SWITCHING REGULATOR CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the SWITCHING REGULATOR board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	5 V DC output voltage	TP1	R26	• REC • TUNER	1) Connect a digital voltmeter between TP1 and TP-GND. 2) Record in the TUNER mode, and adjust R26 for 5.345 ± 0.05 V.
2	Semi-REG 15 V output voltage	CN3 pin 7	R9	• REC • TUNER	1) Connect a digital voltmeter between CN3 pin 7 and TP-GND. 2) Record in the TUMER mode, and adjust R9 for 15.2 ± 0.2 V.

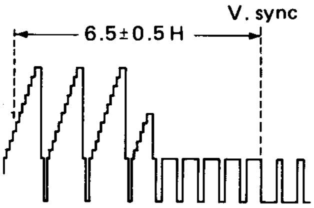
2.3 TIMER CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the TIMER board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Timer clock	TP2 TP1 (GND)	C10	• E-E	1) Connect a frequency counter between TP2 and GND. 2) Short between TP3 (TEST) and GND, then short the leads of electrolytic capacitor C5 once in order to reset IC1. 3) Adjust C10 for 2048.000 ± 0.002 Hz (488.2808 to 488.2818 μs).

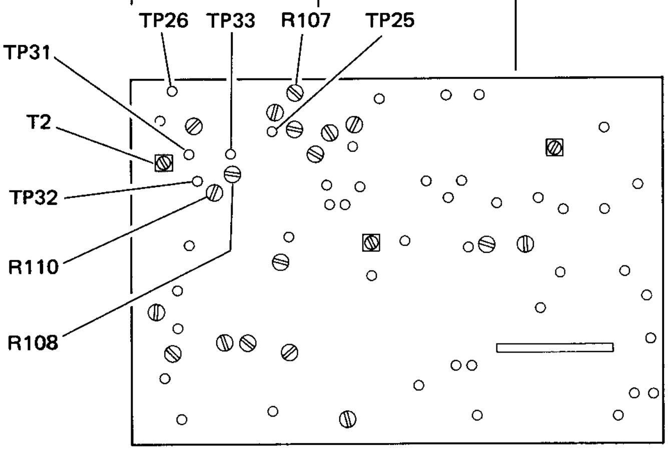
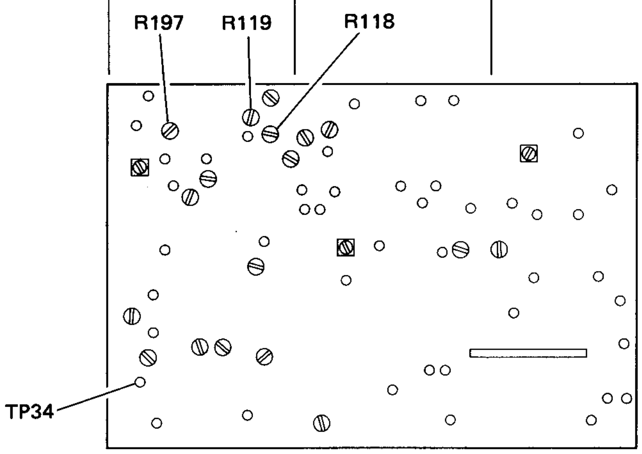
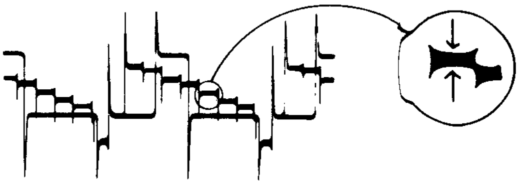
2.4 SERVO CIRCUIT

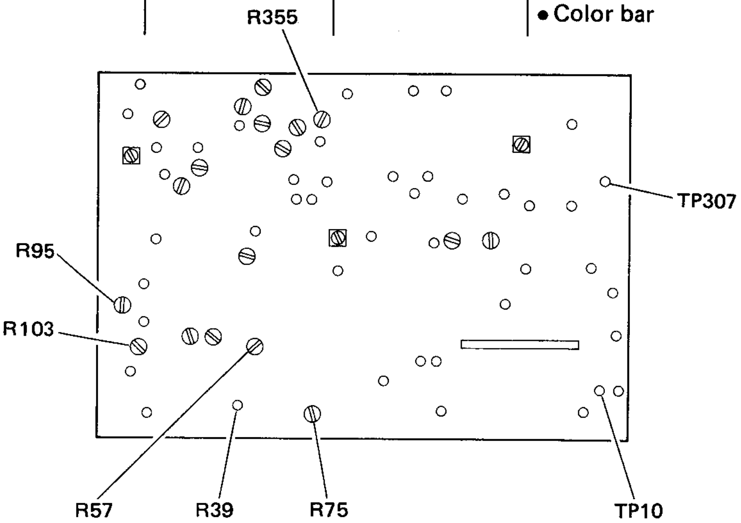
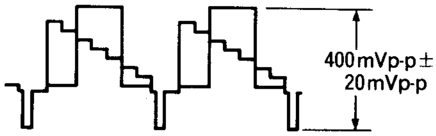
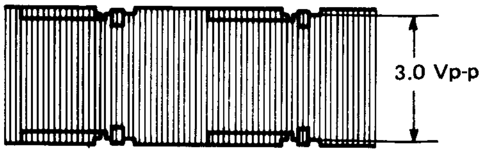
Note: Unless otherwise noted, all test points and adjustments are located on the SERVO board.

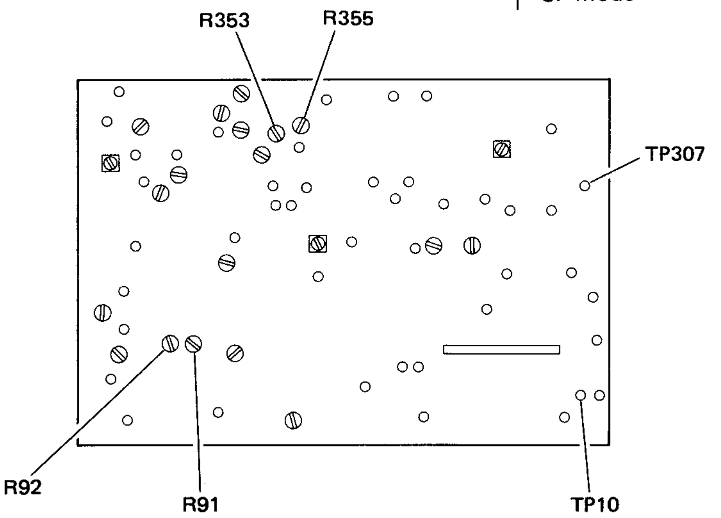
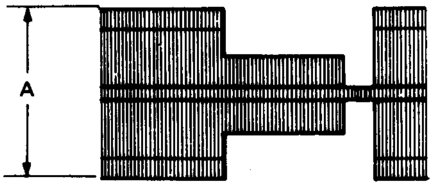
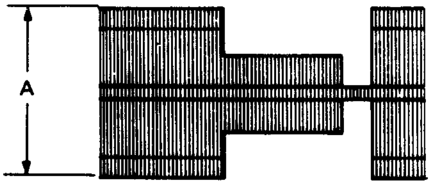
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SP PB switching point	TP23 or TP10 [VIDEO PWB]	R32 (SW POINT)	• PB • MH-2 (stairstep) • Trigger slope (–) • SP mode  	1) Connect an oscilloscope to TP10 or TP23 of the VIDEO board. 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP11 of the VIDEO board. 4) Adjust R32 to position the trigger point 6.5 ± 0.5 H from V. sync.
2	SP slow tracking preset	Monitor	R55 (SP SLOW)	• REC ↓ • Slow PB (1/6) • SP	1) Set the TRACKING control of the FRONT to the preset position by simultaneously pressing the + and – TRACKING buttons. 2) Record a color bar signal in the SP mode, then play back in the Slow mode. 3) Adjust R55 to minimize noise bars on the video monitor screen.
	LP slow tracking preset	Monitor	R59 (LP SLOW)	• REC ↓ • Slow PB (1/6) • LP	4) In the same manner, adjust R59 for the LP mode.
3	SP X2 normal tracking preset	Monitor	R38 (SP X2)	• SP • REC ↓ • X2 Play	1) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 2) Record a color bar signal in the SP mode, then play back in the 2X Play mode. 3) Adjust R38 to minimize noise bars on the video monitor screen.
	EP X2 normal tracking preset	Monitor	R36 (LP X2)	• LP • REC ↓ • X2 Play	4) In the same manner, adjust R36 for the LP mode.
4	V. pulse position	Monitor	R11 (V. LOCK)	• REC then PB ↓ • STILL • SP • Color bar	1) Record the color bar signal, then play back. 2) In the Still mode, observe the monitor and adjust R11 (REAR panel) for the minimum vertical jitter.

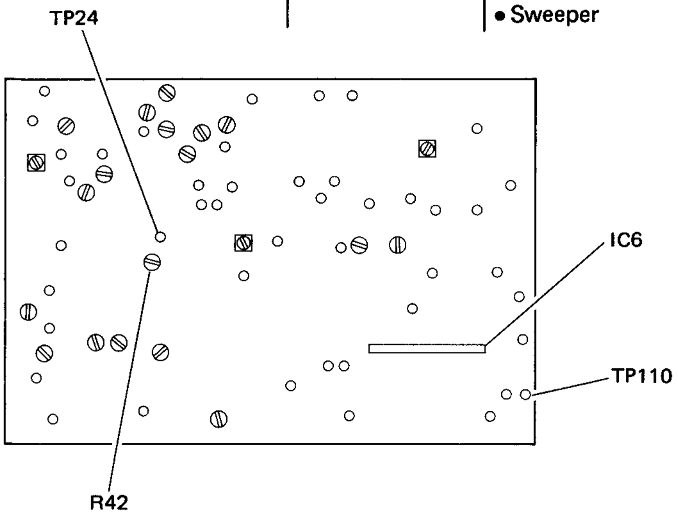
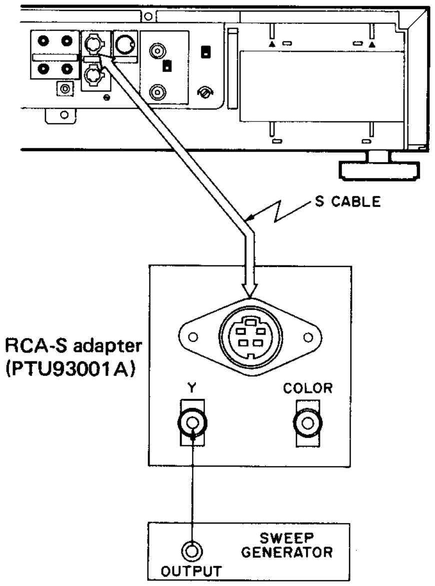
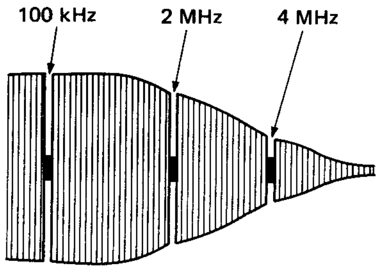
2.5 VIDEO CIRCUIT

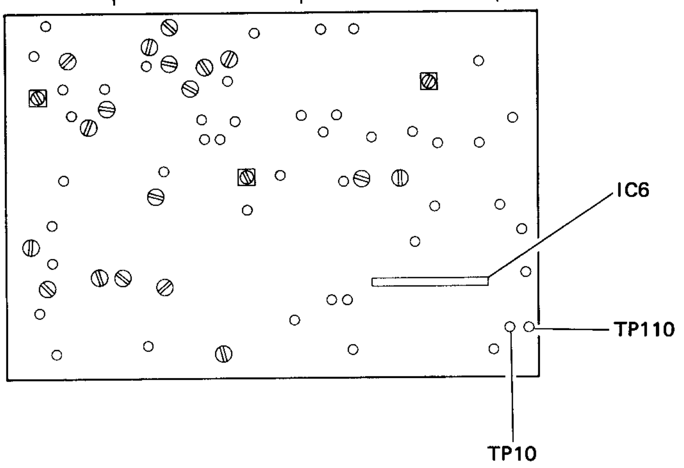
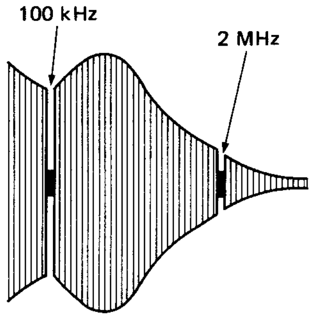
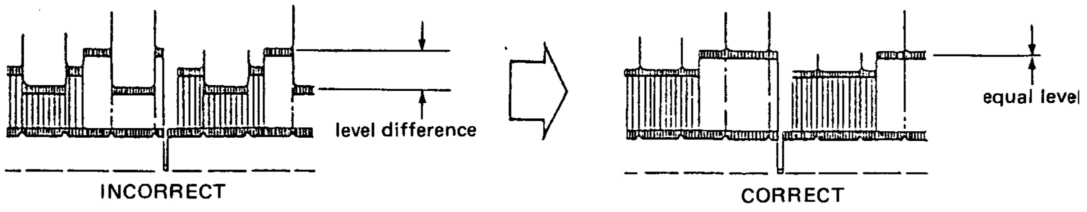
Note: Unless otherwise noted, all test points and adjustments are located on the VIDEO board.

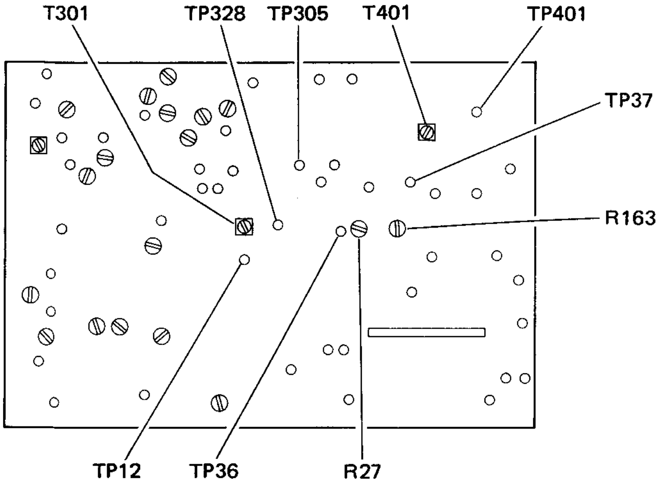
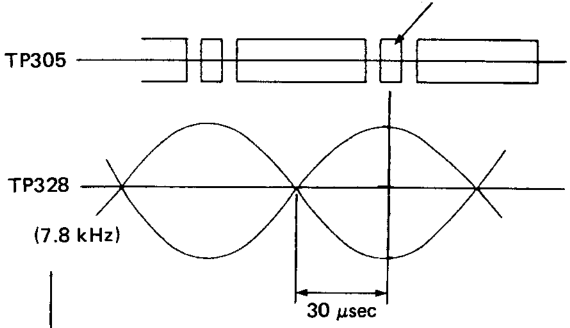
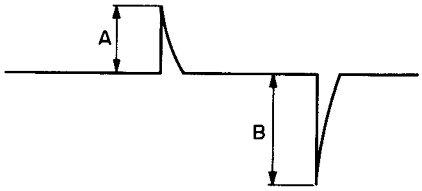
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Y comb level	TP25 TP26  TP26 TP33 R107 TP25 TP31 T2 TP32 R110 R108	R107	• S-VHS mode • SP • E-E • Color bar	1) Connect one channel of a dual trace oscilloscope to TP25 and the other channel to TP26. 2) Set the oscilloscope for ALT mode. 3) Adjust R107 for equal channel levels.
2	2H delayed chroma	TP31 TP32	R110 T2	• S-VHS mode • SP • E-E • Color bar	1) Connect CH-1 of a dual trace oscilloscope to TP31 and CH-2 to TP32. 2) Set VOLT/DIV controls of both channels to the same range (e.g., 50 mV). 3) Invert CH-2 and use ADD mode. 4) Alternately adjust R110 and T2 for minimum level.
3	4H delayed chroma	TP31 TP33	R108 T2	• S-VHS mode • SP • E-E • Color bar	1) In the same manner, adjust R108 and T2 for minimum level.
4	Y-comb	TP34 	R119 R118 R197	• N-VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP34. 2) Adjust R118, R119 and R197 alternately for minimum chromatic level (less than 25mVp-p of the magenta portion).  Fig. 2-5-1

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
5	E-E level  	TP10	R75	• S-VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP10. 2) Adjust R75 for 0.97 ± 0.03 Vp-p (with 75 Ω load).
6	Sub empha. input level	TP39	R57	• S-VHS mode • SP • E-E • Color bar	1) Connect an oscilloscope to TP39. 2) Adjust R57 for 400 ± 20 mVp-p siganl level in the SP mode.  Fig. 2-5-2
7	S mode REC FM level	TP3 (PRE/REC)	R103 (S-MODE REC FM)	• S-VHS mode • LP mode • REC • Color bar	**Note:** Connect an oscilloscope's GND terminal to TP-GND near the shield case of the PRE/REC board. 1) Connect an oscilloscope to TP3 of the PRE/REC board and record a color bar signal in the LP mode. 2) Adjust R103 for 3.0 ± 0.2 Vp-p pedestal level, between centers of the waveform outline at the pedestal portion.  Fig. 2-5-3
8	N mode REC FM level	TP3 (PRE/REC)	R95 (N-MODE REC FM)	• N mode • LP mode • REC • Color bar	1) In the same manner as above (2.5.7), adjust R95 for 2.0 ± 0.1 Vp-p pedestal level.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
9	SP REC color level and balance	TP307 	R355	• S-VHS mode • PB mode • MH-2H color bars • SP mode • REC then PB • Color bars • SP mode	**Note:** Use larger-level waveform for adjustment. 1) Connect an oscilloscope to TP307. Play back the color bar segment of the MH-2H and observe color signal level. 2) Adjust by pressing the + and – TRACKING buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 4) Record and play back the color bar signal. If necessary, before recording, adjust R355 so that the higher level channel becomes 100% of the noted level "A" during playback. At this time, confirm that the channel difference is within 4 dB.  Fig. 2-5-4
10	LP REC color level and balance	TP307  Fig. 2-5-5	R353 (LP REC COLOR)	• S-VHS mode • PB mode • LP mode • MH-2H color bar • REC then PB • Color bar • LP mode	**Note:** Perform the LP mode adjustment after completing that for the SP mode. 1) Connect an oscilloscope to TP307. Play back the color bar segment of the MH-2H and observe color signal level. 2) Adjust by pressing the + and – TRACKING buttons of the FRONT panel for maximum level of the color waveform and make a note of the higher color level "A". 3) Set the TRACKING control of the FRONT panel to the preset position by simultaneously pressing the + and – TRACKING buttons. 4) Record and play back the color bar signal. If necessary, before recording, adjust R353 so that the higher level channel becomes 110% of the noted level "A" during playback. At this time, confirm that the channel difference is within 4 dB.
11	S mode PB Y level	VIDEO OUT or TP10	R92 (S-MODE PB Y LEVEL)	• S-VHS mode • SP mode • REC then PB • Color bars	1) Connect an oscilloscope to VIDEO OUT. 2) Record the color bar signal in the SP mode, then play it back. 3) Adjust R92 for 0.97 ± 0.03 Vp-p (with 75 Ω load).
12	N mode PB Y level	VIDEO OUT or TP10	R91 (N-MODE PB Y LEVEL)	• N mode • SP mode • REC then PB • Color bars	1) In the same manner as above (2.5. 11), adjust R91 for 0.97 ± 0.03 Vp-p (with 75 Ω load).

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
13	Sharpness preset  	TP24	R42	• S mode • SP • E-E • Sweeper	1) Connect an oscilloscope to TP24. 2) Set the SHARPNESS control of the FRONT panel to the center detent position. 3) Adjust R42 so that the 2 MHz mark, in the state of EDIT SW "OFF", becomes nearly equal to that in the state of EDIT SW "ON".
14	S mode SP frequency response and balance  S CABLE RCA-S adapter (PTU93001A) Y COLOR SWEEP GENERATOR OUTPUT	TP110	R108 [PRE/REC PWB]	• S-VHS mode • SP mode • REC then PB • Sweeper	1) Terminate TP110 (S-OUT) with a 75 Ω load and set the SHARPNESS control to the center detent position. 2) Connect a signal generator to S-IN and an oscilloscope to TP110. 3) Record in the SP mode, then play back and set 100 kHz level to 3 scale divisions on the oscilloscope screen at CH-1 waveform. 4) Adjust R108 (PRE/REC board) so that the 4.0 MHz level becomes 1.8 on 2.4 scale divisions (–3 ± 1 dB). 5) Confirm that the level difference between both channels is less than 2 dB.  Fig. 2-5-6
15	S mode LP frequency response and balance	TP110	R106 [PRE/REC PWB]	• S-VHS mode • LP mode • REC then PB • Sweeper	1) In the same manner as above (2.5.14), perform adjustment for LP mode. 2) Record in the LP mode, then play back and set 100 kHz level to 3 scale divisions on the screen at CH-1 waveform. 3) Adjust R106 so that the 4.0 MHz level becomes 1.5 on 2.1 scale divisions (–4 ± 1 dB). 4) Confirm that the level difference between both channels is less than 2 dB.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
16	N mode SP frequency response and balance  	TP110	R130 [PRE/REC PWB]	• N mode • SP mode • REC then PB • Sweeper	1) Terminate TP110 (S-OUT) with a 75 Ω load and set the SHARPNESS control to the center detent position. 2) Connect a signal generator to S-IN and an oscilloscope to TP110. 3) Record in the SP mode, then play back and set 100 kHz level to 3 scale divisions on the oscilloscope screen at CH-1 waveform. 4) Adjust R130 (PRE/REC board) so that the 2.0 MHz level becomes 2.4 on 3.0 scale divisions (–1 ± 1 dB). 5) Confirm that the level difference between both channels is less than 2 dB.  Fig. 2-5-7
17	N mode LP frequency response and balance	TP110	R131 [PRE/REC PWB]	• N mode • SP mode • REC then PB • Sweeper	1) In the same manner as above (2.5.16), perform adjustment for LP mode. 2) Record in the LP mode, then play back and set 100 kHz level to 3 scale divisions on the screen at CH-1 waveform. 3) Adjust R131 (PRE/REC board) so that the 2 MHz level becomes 1.5 on 1.8 scale divisions (–5 ± 1 dB). 4) Confirm that the level difference between both channels is less than 2 dB.
18	0.5H delayed color level  Fig. 2-5-8	TP10	R9 (incl. IC6)	• Color bar • LP mode • REC then PB ↓ • SEARCH FF	1) Connect an oscilloscope to VIDEO OUT or TP10 and set the time base of the oscilloscope to 2 ms/div. Trigger the oscilloscope externally (+ slope) with the signal from TP11 (DRUM FF). 2) During Search, adjust R9 so that the Y level difference is uniform at VIDEO OUT as shown in the figure.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
19	APC error phase  T301 TP328 TP305 T401 TP401 TP37 R163 TP12 TP36 R27	TP305 TP328	T301	• REC then PB • Color bar • SP mode	1) Connect one channel of a dual trase oscilloscope to TP305 and the other channel to TP328. Trigger the oscilloscope exterrally (– slope) with the signal from TP12 (H. SYNC). 2) Adjust T301 to position the zero-cross 30 μ-sec ± 3 μsec from the center of the burst signal as shown in the figure.  Color Burst Signal TP305 TP328 (7.8 kHz) 30 μsec **Fig. 2-5-9**
20	SECAM DET.	TP401	T401	• E-E • SECAM color bar	1) Connect an oscilloscope to TP401. 2) Adjust T401 so that A and B are related as follows: A : B = 3 : 4  **Fig. 2-5-10**
21	0.25H delayed VIDEO-1	TP36	R163	• E-E • Color bar	1) Connect an oscilloscope to TP36. 2) Adjust R163 for maximum output level.
22	0.25H delayed VIDEO-2	TP36 TP37	R27	• E-E • Color bar	1) Connect one channel of a dual-trace oscilloscope to TP36 and the other channel to TP37. 2) Set the oscilloscope for ALT mode. 3) Adjust R27 for equal channel levels.

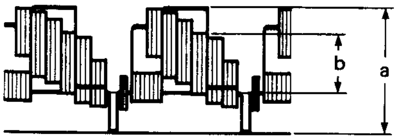
2.6 AUDIO CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the AUDIO board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio bias level	TP31 TP32 (GND)	R9 (BIAS ADJ)	• N mode • SP mode • No signal	1) Connect a millivoltmeter between TP31 and TP32. 2) Set for REC mode without signal. 3) Adjust R9 for 2.2 mVrms.
2	Audio PB level	AUDIO OUT	R28 (PB LEVEL ADJ)	• REC then PB • SP and LP mode • N mode	1) Connect an audio tester to AUDIO OUT. 2) Supply an audio signal (–8 dBs/1 kHz) to Peri. IN and record together with a video signal, then play back. 3) Adjust R28 so that the audio output level during playback becomes –6 ± 1 dBs at SP mode (–6 ± 2 dBs at LP mode).
3	REC FM level	TP53	R80 (FM REC ADJ)	• S-VHS mode • SP mode • REC then PB • No signal	1) Record in the SP mode, without an audio signal, then play back. 2) Adjust R80 for 50 mVp-p ± 5 mV FM audio playback voltage.
4	E-E level	AUDIO OUT	R40 (E-E LEVEL[L])	• ALC: OFF • REC mode • AUDIO OUT to Hi-Fi	1) Suplly a 1 kHz, –8 dBs audio signal to Peri. IN and a video signal to Peri. IN. 2) Set Hi-Fi REC level controls to detent position. In the REC mode, adjust R40 to obtain –6 ± 0.5 dBs at AUDIO OUT.
			R41 (E-E LEVEL[R])		3) In the same manner, adjust R41 for the R (CH-2) channel.
5	Level indicator	FDP (LEVEL IND.)	R73 (LEVEL IND [L])	• AUDIO OUT to Hi-Fi • E-E (Stop) mode • LEVEL INDICATOR SW: ON	**Note:** Perform the level indicator adjustment after completing the E-E level adjustment (section 2.6.4). 1) Supply a 1 kHz, –8 dBs audio signal to Peri. IN. 2) Set Hi-Fi REC level controls to detent position. In the E-E (Stop) mode, adjust R73 to the point where the FDP level indicators show 0 dB.
			R74 (LEVEL IND [R])		3) In the same manner, adjust R74 for the R (CH-2) channel.

2.7 IF CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the IF board.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	VCO	Monitor	T2	• TV broadcast • Tuner mode	1) Receive a color broadcast on a VHF-HI channel (7 to 10). 2) Adjust T2 to obtain a fine picture on the monitor.
2	Color level  Fig. 2-7-1 Y level = 1 Magenta level = 0.48 a : b = 1 : 0.48	VIDEO OUT	R40	• TV broadcast • Tuner mode	1) Supply a color bar signal on a VHF-HI channel (7 to 10) from a TV channel signal generator and select the channel corresponding to the generator. 2) Adjust R40 to produce signal waveform as shown in the figure.
3	RF AGC	Monitor	R21	• TV broadcast • Tuner mode	**Note:** Adjust R21 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields. 1) Adjust R21 to minimize noise or streaks on the TV screen. 2) Check for absence of abnormality on all channels.

2.8 DEMODULATOR CIRCUIT

Note: Unless otherwise noted, all test points and adjustments are located on the DEMODULATOR board.

Audio Multiplex TV Signal Generator

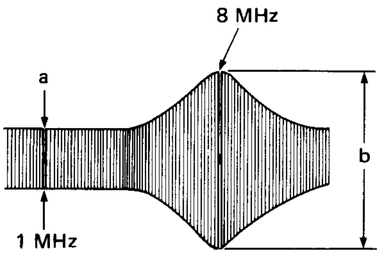
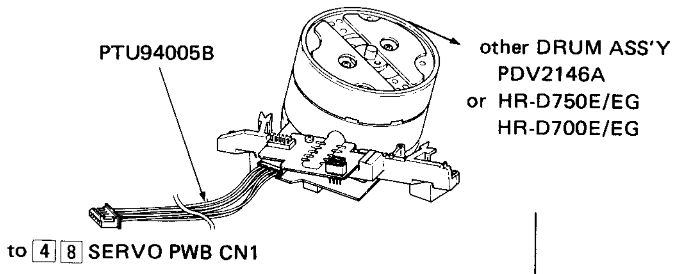
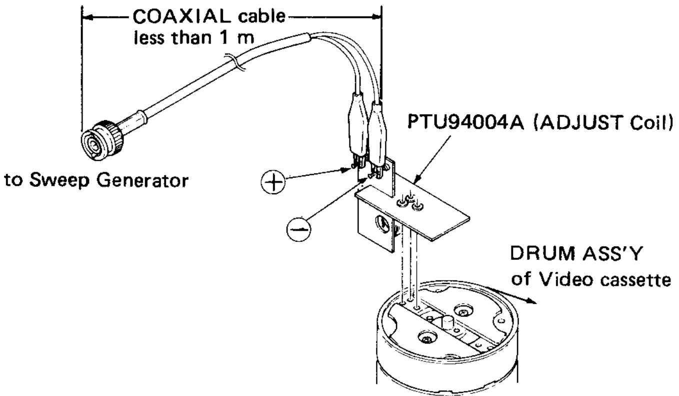
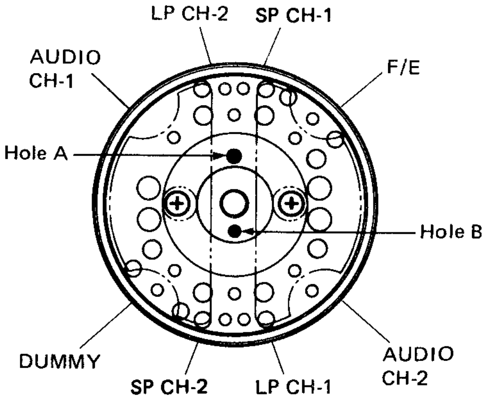
Recommended Specifications

1. Signal Format	Based on CCIR-B
2. Frequency	
Video Carrier Fv	38.9 MHz
1st Sound Carrier fs_1	33.4 MHz
2nd Sound Carrier fs_2	33.1578125 MHz
3. Modulator	
Video	Crosshatch (black on white) V: 50 Hz, H: 15.625 kHz
Audio	Sinewave 1 kHz; CH1 and CH-2 outputs switchable
4. Output	97 dB/μV (open) ± 2 dB fixed, BNC-R 75 Ω
5. P-S Ratio	S_1 P − 13 dB ± 2 fixed S_2 P − 20 dB ± 2 fixed
6. Modulation	
Video	87.5% ± 3%
Audio	±30 kHz ± 2 kHz
7. Stereo Separation	Less than −40 dB
8. Pilot Signal	
Carrier Frequency	54.6875 kHz ± 5 Hz synchronized type
Stereo	117.5 Hz AM 50%
Dual	274.1 Hz AM 50%

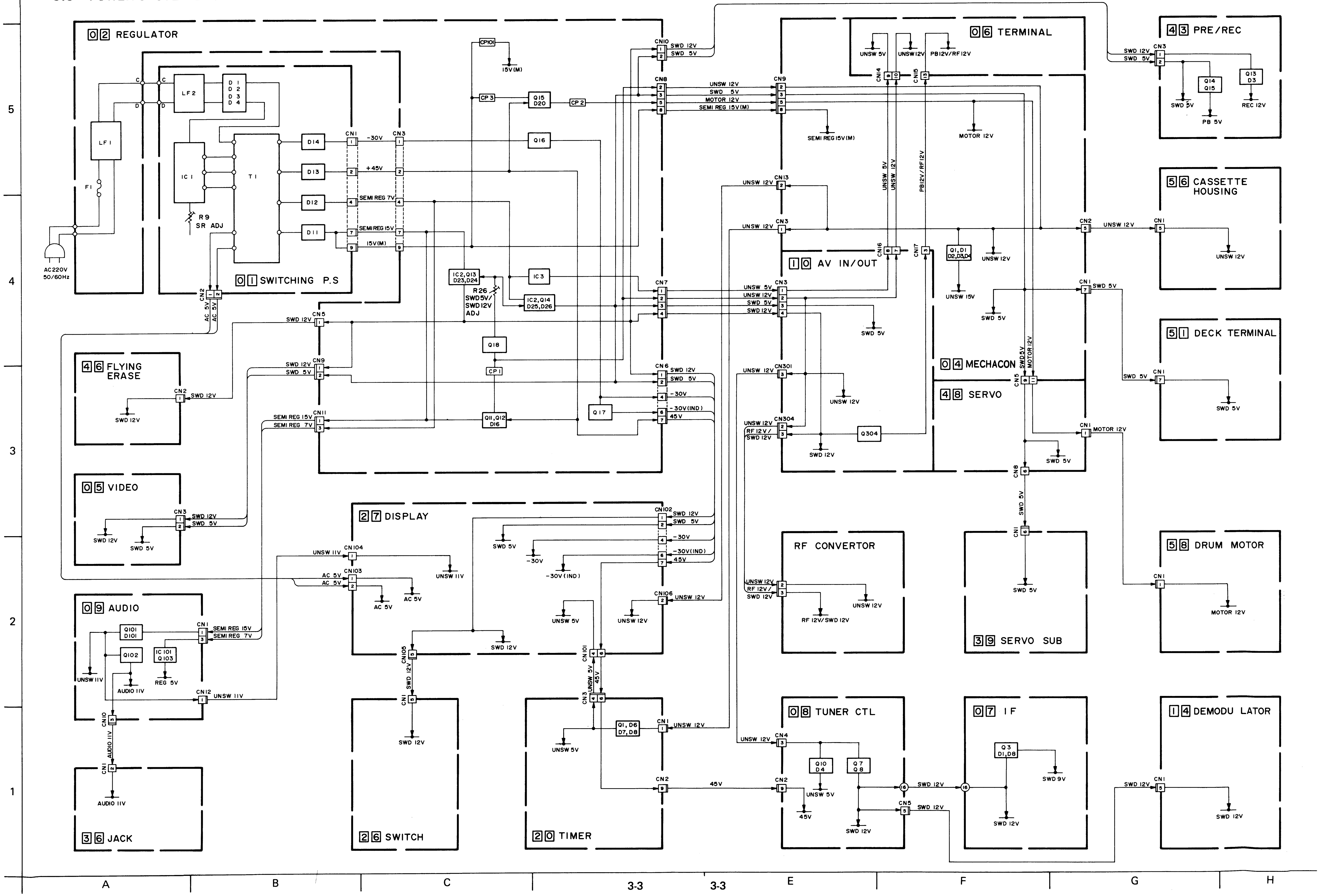
9. Sound Modulation Modes	S_1	S_2
Mono	Mono 1	Mono 2
Stereo	(L + R)/2	R
Dual	Mono 1	Mono 2
10. Functions	S_1	S_2
Mono (M)	100%	100%
Stereo (L, R)	(L + R)/2	R
(L)	L/2	–
(R)	R/2	R
(OFF)	–	–
Mult (S_1, S_2)	100%	100%
(S_1)	100%	0
(S_2)	0	100%
(OFF)	0	0
V. MOD (ON/OFF)		
11. Frequency Accuracy	Within $\pm 5 \times 10^{-5}$	
12. Spurious	Less than −50 dB	
13. Saw Filter	Self-contained	

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	First audio detector coil	IC1 pin 3	T4 [IF PWB]	•BILING mode •SUB: unmod. •MAIN: mod.	1) Apply Main audio modulated signal to the front end IF terminal. 2) Connect a distortion meter to IC1 pin 3. 3) Adjust T4 of the IF baord for minimum distortion. **Note:** Audio multiplex TV signal generator connection is the same for the following adjustments.
2	Second audio detector coil	IC1 pin 2	T1	• BILING mode • SUB: mod. • MAIN: unmod.	1) Connect a distortion meter to IC1 pin 2. 2) Adjust T1 of the IF board for minimum distortion.
3	Stereo separation	IC1 pin 5	R2	• STEREO mode • R : mod. • L : unmod.	1) Set a signal generator to Stereo mode, but adjust only the R channel. 2) Connect an oscilloscope to IC1 pin 5. 3) Adjust R2 for minimum output level.
4	Buzz	CN2 pin 2	T8, T2 [IF PWB]	• STEREO mode • R/L : unmod.	1) Connect a noise meter to CN2 pin 2 and an oscilloscope to AC output of the noise meter. 2) Adjust T8 of the IF board for minimum Philips pattern noise. 3) Adjust T2 of the IF board for minimum crosshatch noise.
5	Audio output level	CN2 pin 2 (L) CN2 pin 4 (R)	R21 (L) R24 (R)	• STEREO mode • R: mod./unmod. • L: unmod./mod.	1) Set a signal generator for Stereo mode. 2) Connect an audio meter to CN2 pin 2. 3) Adjust R21 (L channel) for −18.0 dBs. 4) Similarly, connect an audio meter to pin 4 of CN2 and adjust R24 for the R channel.

2.9 PRE/REC CIRCUIT

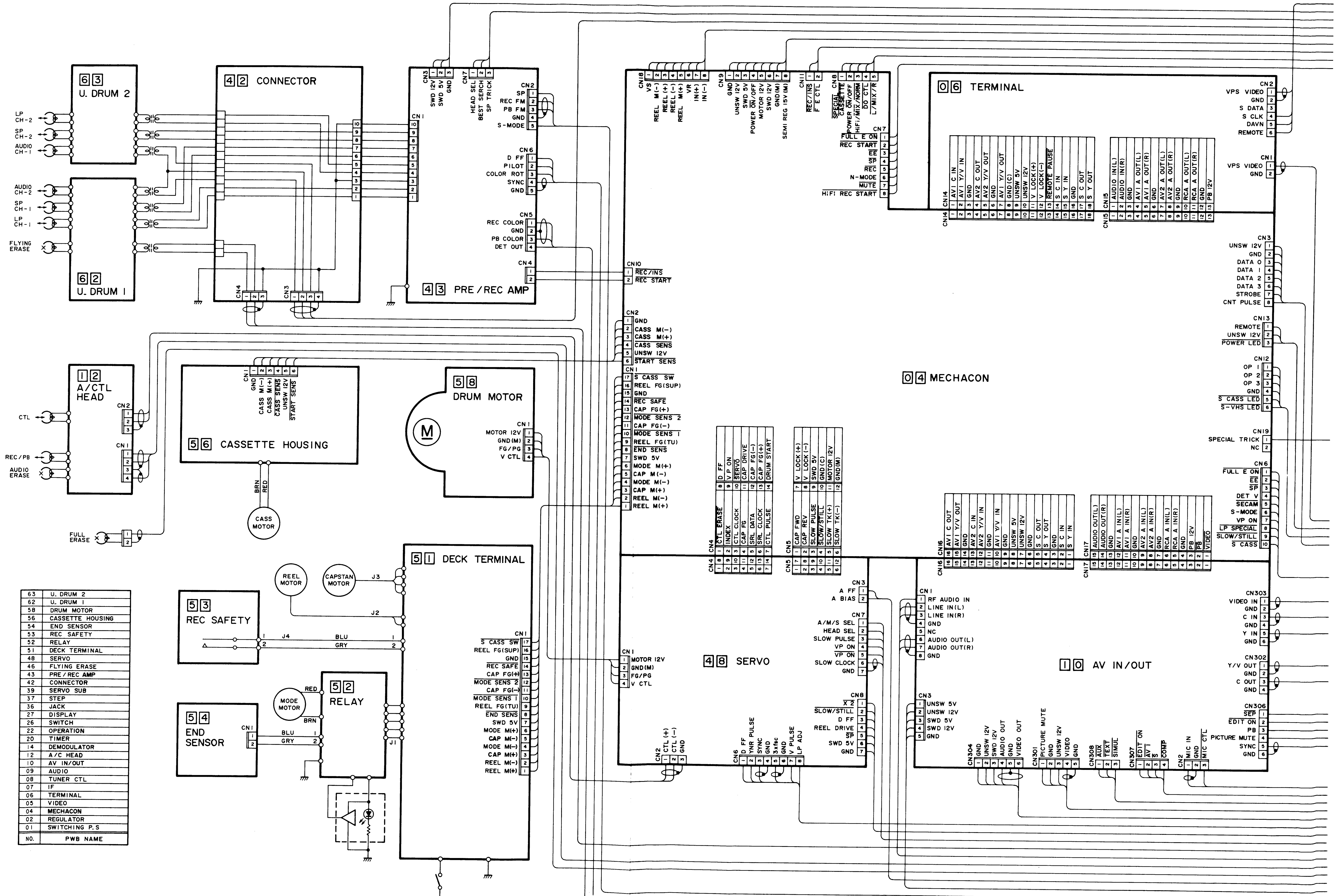
No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Video head resonance & Q (quality factor)	TP6  Fig. 2-9-1  PTU94005B other DRUM ASS'Y PDV2146A or HR-D750E/EG HR-D700E/EG to 4 8 SERVO PWB CN1 Fig. 2-9-2 other DRUM ASS'Y	CH1 C7 (F) R11 (Q)	• RF sweeper • PB • SP mode VHS	**Note:** (1) This adjustment is required only after replacing the upper drum (video heads). (2) Connect ground of probe (oscilloscope) to shield case of the PRE/REC board. (3) A drum assembly is supported on the desk because of rotation. 1) Disconnect a connector of CN1 from the SERVO board. Connect and use the DRUM assembly as shown in Fig. 2-9-2. 2) Disable the cassette LED on the main-deck by applying an opaque cover. Set for the playback mode with a cassette tape. 3) Connect an oscilloscope to TP6 of the PRE/REC board. Supply a sweeper generator output to adjustment jig as shown in Fig. 2-9-3, then adjust the sweeper generator again so that the waveform does not distort at TP6. 4) Trigger the oscilloscope externally with the signal from TP11 (DRUM FF) of the VIDEO board. 5) Use (–) trigger for CH-1 and (+) trigger for CH-2. Adjust C7 and C5 to set the CH-1 and CH-2 resonance point to 8 MHz. Use the control of the oscilloscope to position the 1 MHz region at graduation 2 of the oscilloscope scale. 6) Adjust R11 to position the 8 MHz portion at 4 of the oscilloscope graduation as shown in Fig. 2-9-1. 7) In the same manner, adjust R15 for CH-2.
			CH2 C5 (F) R15 (Q)		
		TP7	CH1 C4 R13 (Q)	• RF sweeper • PB • LP mode VHS	8) Repeat the above steps (1 to 5) for the LP mode. Adjust resonance with C4 and Q with R13.
		 COAXIAL cable less than 1 m to Sweep Generator + – PTU94004A (ADJUST Coil) DRUM ASS'Y of Video cassette Fig. 2-9-3	CH2 C2 (F) R12 (Q)		9) Similarly, perform adjustment in the same manner as for CH-1. Adjust resonance with C2 and Q with R12.  LP CH-2 SP CH-1 AUDIO CH-1 F/E Hole A Hole B DUMMY SP CH-2 LP CH-1 AUDIO CH-2 Fig. 2-9-4

3.3 POWER SYSTEM BLOCK DIAGRAM



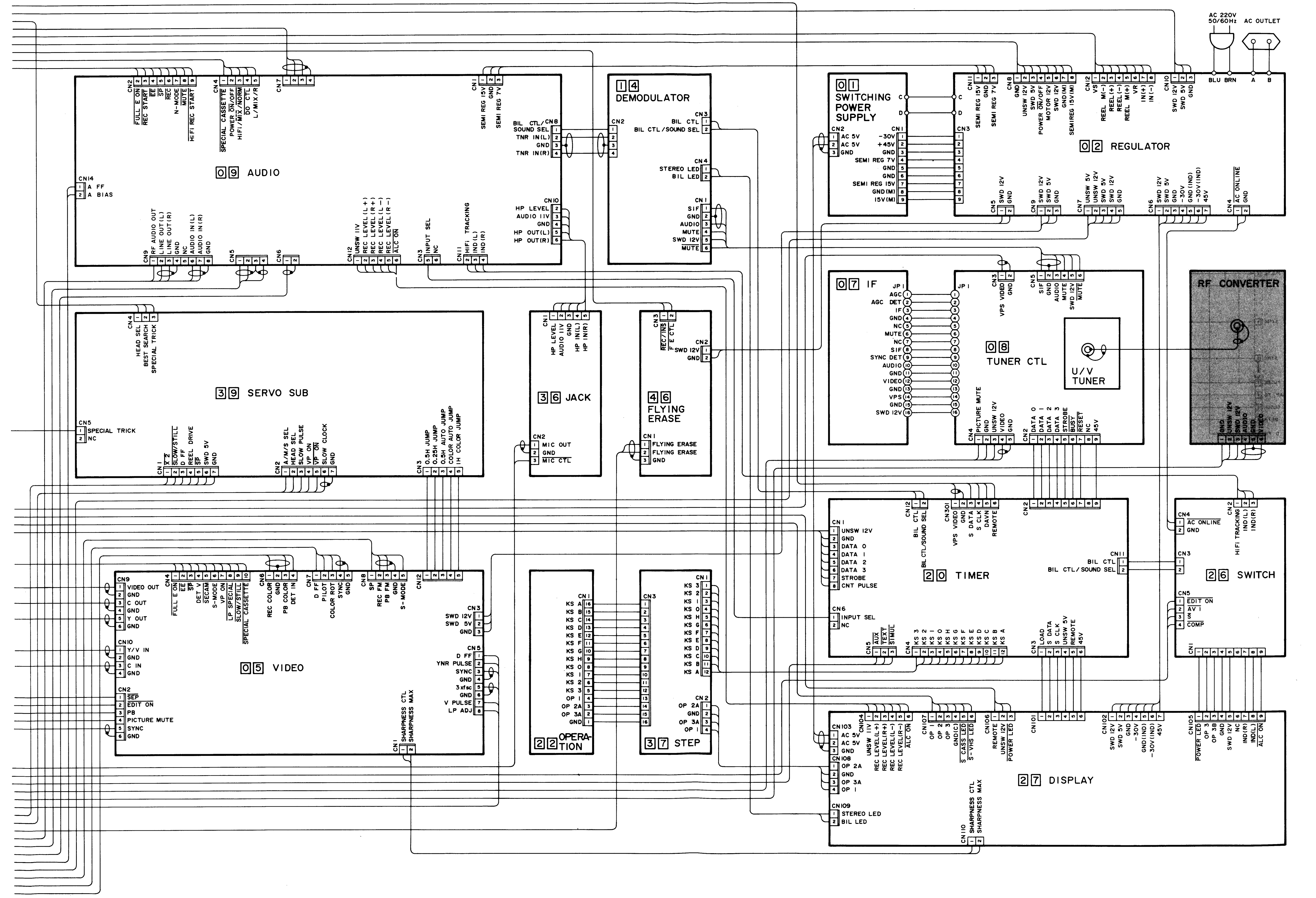
02 REGULATOR
01 SWITCHING P.S
LF1
LF2
F1
IC1
T1
R9 SR ADJ
D1 D2 D3 D4
D14
D13
D12
D11
AC220V 50/60Hz
CN1
CN2
CN3
-30V
+45V
SEMI REG 7V
SEMI REG 15V
15V(M)
CP101
CP3
CP2
CP1
Q15 D20
Q16
IC3
IC2,Q13 D23,D24
IC2,Q14 D25,D26
R26 SWD5V/ SWD12V ADJ
Q18
Q11,Q12 D16
Q17
CN5
CN6
CN7
CN8
CN9
CN10
CN11
SWD 12V
SWD 5V
UNSW 12V
MOTOR 12V
SEMI REG 15V(M)
-30V(IND)
45V
AC 5V
46 FLYING ERASE
05 VIDEO
09 AUDIO
Q101 D101
Q102
IC101 Q103
REG 5V
AUDIO 11V
UNSW 11V
CN12
36 JACK
27 DISPLAY
CN102
CN103
CN104
CN105
CN106
26 SWITCH
20 TIMER
Q1, D6 D7, D8
06 TERMINAL
CN14
CN15
CN16
CN17
UNSW 5V
PB12V/RF12V
10 AV IN/OUT
CN13
Q1, D1 D2,D3,D4
UNSW 15V
04 MECHACON
48 SERVO
CN301
CN304
Q304
RF 12V/ SWD 12V
RF CONVERTOR
RF 12V/SWD 12V
08 TUNER CTL
Q10 D4
Q7 Q8
07 IF
Q3 D1,D8
SWD 9V
39 SERVO SUB
43 PRE/REC
Q14 Q15
Q13 D3
PB 5V
REC 12V
56 CASSETTE HOUSING
51 DECK TERMINAL
58 DRUM MOTOR
14 DEMODU LATOR
6
5
4
3
2
1
A
B
C
E
F
G
H

3.4 BOARD INTERCONNECTIONS



63 U. DRUM 2
62 U. DRUM 1
LP CH-2
SP CH-2
AUDIO CH-1
AUDIO CH-2
SP CH-1
LP CH-1
FLYING ERASE
42 CONNECTOR
CN4
CN3
43 PRE/REC AMP
CN3 SWD 12V SWD 5V GND
CN7 HEAD SEL BEST SERCH SP TRICK
CN2 SP REC FM PB FM GND S-MODE
CN6 D FF PILOT COLOR ROT SYNC GND
CN5 REC COLOR GND PB COLOR DET OUT
CN4
CN1
12 A/CTL HEAD
CTL
REC/PB
AUDIO ERASE
FULL ERASE
56 CASSETTE HOUSING
GND CASS M(-) CASS M(+) CASS SENS UNSW 12V START SENS
CASS MOTOR
BRN
RED
58 DRUM MOTOR
M
MOTOR 12V GND(M) FG/PG V CTL
51 DECK TERMINAL
REEL MOTOR
CAPSTAN MOTOR
J3
J2
J1
J4
BLU
GRY
53 REC SAFETY
52 RELAY
MODE MOTOR
54 END SENSOR
S CASS SW
REEL FG(SUP)
GND
REC SAFE
CAP FG(+)
MODE SENS 2
CAP FG(-)
MODE SENS 1
REEL FG(TU)
END SENS
SWD 5V
MODE M(+)
CAP M(-)
MODE M(-)
CAP M(+)
REEL M(-)
REEL M(+)
04 MECHACON
CN18 VS REEL M(-) REEL (+) REEL (-) REEL M(+) VR IN(+) IN(-)
CN9 GND UNSW 12V SWD 5V POWER ON/OFF MOTOR 12V SWD 12V GND(M) SEMI REG 15V(M)
CN11 REC/INS F E CTL
CN8 SPECIAL CASSETTE POWER ON/OFF HiFi/MIX/NORM DO CTL L/MIX/R
CN7 FULL E ON REC START EE SP REC N-MODE MUTE HiFi REC START
CN10 REC/INS REC START
CN2 GND CASS M(-) CASS M(+) CASS SENS UNSW 12V START SENS
CN1 S CASS SW REEL FG(SUP) GND REC SAFE CAP FG(+) MODE SENS 2 CAP FG(-) MODE SENS 1 REEL FG(TU) END SENS SWD 5V MODE M(+) CAP M(-) MODE M(-) CAP M(+) REEL M(-) REEL M(+)
CN4 CTL ERASE INDEX CTL CLOCK CAP FG SRL DATA SRL CLOCK CTL PULSE D FF V.P ON SERVO CAP DRIVE CAP FG(-) CAP FG(+) DRUM START
CN5 CAP FWD CAP REV SLOW PULSE SLOW/STILL SLOW TK(+) SLOW TK(-) V LOCK(+) V LOCK(-) SWD 5V GND(C) MOTOR 12V GND(M)
06 TERMINAL
CN2 VPS VIDEO GND S DATA S CLK DAVN REMOTE
CN1 VPS VIDEO GND
CN14 AV1 C IN AV1 Y/V IN GND AV2 C OUT AV2 Y/V OUT GND AV1 Y/V OUT GND(C) UNSW 5V UNSW 12V V LOCK(+) V LOCK(-) REMOTE PAUSE S C IN S Y IN GND S C OUT S Y OUT
CN15 AUDIO IN(L) AUDIO IN(R) GND AV1 A OUT(L) AV1 A OUT(R) GND AV2 A OUT(L) AV2 A OUT(R) GND RCA A OUT(L) RCA A OUT(R) GND PB 12V
CN3 UNSW 12V GND DATA 0 DATA 1 DATA 2 DATA 3 STROBE CNT PULSE
CN13 REMOTE UNSW 12V POWER LED
CN12 OP 1 OP 2 OP 3 GND S CASS LED S-VHS LED
CN19 SPECIAL TRICK NC
CN6 FULL E ON EE SP DET V SECAM S-MODE VP ON LP SPECIAL SLOW/STILL S CASS
48 SERVO
CN3 A FF A BIAS
CN7 A/M/S SEL HEAD SEL SLOW PULSE VP ON VP ON SLOW CLOCK GND
CN8 X2 SLOW/STILL D FF REEL DRIVE SP SWD 5V GND
CN1 MOTOR 12V GND(M) FG/PG V CTL
CN2 CTL(+) CTL(-) GND
CN6 D FF YNR PULSE SYNC GND 3xfsc GND V PULSE LP ADJ
10 AV IN/OUT
CN1 RF AUDIO IN LINE IN(L) LINE IN(R) GND NC AUDIO OUT(L) AUDIO OUT(R) GND
CN3 UNSW 5V UNSW 12V SWD 5V SWD 12V GND
CN16 AV1 C OUT AV1 Y/V OUT GND AV2 C IN AV2 Y/V IN GND AV1 Y/V IN GND UNSW 5V UNSW 12V GND S C OUT S Y OUT GND S C IN S Y IN
CN17 AUDIO OUT(L) AUDIO OUT(R) GND AV1 A IN(L) AV1 A IN(R) GND AV2 A IN(L) AV2 A IN(R) GND RCA A IN(L) RCA A IN(R) GND PB 12V PB VIDEO
CN303 VIDEO IN GND C IN GND Y IN GND
CN302 Y/V OUT GND C OUT GND
CN306 SEP EDIT ON PB PICTURE MUTE SYNC GND
CN304 GND UNSW 12V SWD 12V AUDIO OUT GND VIDEO OUT
CN301 PICTURE MUTE GND UNSW 12V VIDEO GND
CN308 AUX TEXT SIMUL
CN307 EDIT ON AV1 S COMP
CN2 MIC IN GND MIC CTL
6
5
4
3
2
1
A
B
C
E
F
G
H

NO.	PWB NAME
63	U. DRUM 2
62	U. DRUM 1
58	DRUM MOTOR
56	CASSETTE HOUSING
54	END SENSOR
53	REC SAFETY
52	RELAY
51	DECK TERMINAL
48	SERVO
46	FLYING ERASE
43	PRE/REC AMP
42	CONNECTOR
39	SERVO SUB
37	STEP
36	JACK
27	DISPLAY
26	SWITCH
22	OPERATION
20	TIMER
14	DEMODULATOR
12	A/C HEAD
10	AV IN/OUT
09	AUDIO
08	TUNER CTL
07	IF
06	TERMINAL
05	VIDEO
04	MECHACON
02	REGULATOR
01	SWITCHING P.S



09 AUDIO
CN2 FULL E ON / REC START / EE / SP / REC / N-MODE / MUTE / HiFi REC START
CN4 SPECIAL CASSETTE / POWER ON/OFF / HIFI/MIX/NORM / DO CTL / L/MIX/R
CN7
CN1 SEMI REG 15V / GND / SEMI REG 7V
CN8 BIL CTL/SOUND SEL / TNR IN(L) / GND / TNR IN(R)
CN14 A FF / A BIAS
CN10 HP LEVEL / AUDIO 11V / GND / HP OUT(L) / HP OUT(R)
CN9 RF AUDIO OUT / LINE OUT(L) / LINE OUT(R) / GND / NC / AUDIO IN(L) / AUDIO IN(R) / GND
CN5
CN6
CN12 UNSW 11V / REC LEVEL(L+) / REC LEVEL(R+) / REC LEVEL(L−) / REC LEVEL(R−) / ALC ON
CN3 INPUT SEL / NC
CN11 HiFi TRACKING / IND(L) / IND(R)
14 DEMODULATOR
CN2
CN3 BIL CTL / BIL CTL/SOUND SEL
CN4 STEREO LED / BIL LED
CN1 SIF / GND / AUDIO / MUTE / SWD 12V / MUTE
01 SWITCHING POWER SUPPLY
C
D
CN2 AC 5V / AC 5V / GND
CN1 −30V / +45V / GND / SEMI REG 7V / GND / GND / SEMI REG 15V / GND(M) / 15V(M)
02 REGULATOR
CN11 SEMI REG 15V / GND / SEMI REG 7V
CN8 GND / UNSW 12V / SWD 5V / POWER ON/OFF / MOTOR 12V / SWD 12V / GND(M) / SEMIREG 15V(M)
CN12 VS / REEL M(−) / REEL (+) / REEL (−) / REEL M(+) / VR / IN(+) / IN(−)
CN10 SWD 12V / SWD 5V / GND
CN3
CN5 SWD 12V / GND
CN9 SWD 12V / SWD 5V / GND
CN7 UNSW 5V / UNSW 12V / SWD 5V / SWD 12V / GND
CN6 SWD 12V / SWD 5V / GND / −30V / GND(IND) / −30V(IND) / 45V
CN4 AC ONLINE / GND
AC 220V 50/60Hz
AC OUTLET
BLU
BRN
A
B
39 SERVO SUB
CN4 HEAD SEL / BEST SEARCH / SPECIAL TRICK
CN5 SPECIAL TRICK / NC
CN1 Z / SLOW/STILL / D FF / REEL DRIVE / SP / SWD 5V / GND
CN2 A/M/S SEL / HEAD SEL / SLOW PULSE / VP ON / VP ON / SLOW CLOCK / GND
CN3 0.5H JUMP / 0.25H JUMP / 0.5H AUTO JUMP / COLOR AUTO JUMP / 1H COLOR JUMP
36 JACK
CN1 HP LEVEL / AUDIO 11V / GND / HP IN(L) / HP IN(R)
CN2 MIC OUT / GND / MIC CTL
46 FLYING ERASE
CN3 REC/INS / F E CTL
CN2 SWD 12V / GND
CN1 FLYING ERASE / FLYING ERASE / GND
07 IF
JP1 AGC / AGC DET / IF / GND / NC / MUTE / NC / SIF / SYNC DET / AUDIO / GND / VIDEO / GND / VPS / GND / SWD 12V
08 TUNER CTL
JP1
CN3 VPS VIDEO / GND
CN5 SIF / GND / AUDIO / MUTE / SWD 12V / MUTE
U/V TUNER
CN4 PICTURE MUTE / GND / UNSW 12V / VIDEO / GND
CN2 DATA 0 / DATA 1 / DATA 2 / DATA 3 / STROBE / BUSY / RESET / NC / 45V
RF CONVERTER
GND / UNSW 12V / SWD 12V / AUDIO / GND / VIDEO
05 VIDEO
CN9 VIDEO OUT / GND / C OUT / GND / Y OUT / GND
CN10 Y/V IN / GND / C IN / GND
CN2 SEP / EDIT ON / PB / PICTURE MUTE / SYNC / GND
CN4 FULL E ON / EE / SP / DET V / SECAM / S-MODE / VP ON / LP SPECIAL / SLOW/STILL / SPECIAL CASSETTE
CN6 REC COLOR / GND / PB COLOR / DET IN
CN7 D FF / PILOT / COLOR ROT / SYNC / GND
CN8 SP / REC FM / PB FM / GND / S-MODE
CN12
CN3 SWD 12V / SWD 5V / GND
CN5 D FF / YNR PULSE / SYNC / GND / 3xfsc / GND / V PULSE / LP ADJ
CN1 SHARPNESS CTL / SHARPNESS MAX
22 OPERATION
CN1 KS A / KS B / KS C / KS D / KS E / KS F / KS G / KS H / KS O / KS 1 / KS 2 / KS 3 / OP 1 / OP 2A / OP 3A / GND
37 STEP
CN3
CN1 KS 3 / KS 2 / KS 1 / KS O / KS H / KS G / KS F / KS E / KS D / KS C / KS B / KS A
CN2 OP 2A / GND / OP 3A / OP 1
20 TIMER
CN1 UNSW 12V / GND / DATA 0 / DATA 1 / DATA 2 / DATA 3 / STROBE / CNT PULSE
CN12 BIL CTL / BIL CTL/SOUND SEL
CN301 VPS VIDEO / GND / S DATA / S CLK / DAVN / REMOTE
CN2
CN11 BIL CTL / BIL CTL/SOUND SEL
CN6 INPUT SEL / NC
CN5 AUX / TEXT / STIMUL
CN4 KS 3 / KS 2 / KS 1 / KS O / KS H / KS G / KS F / KS E / KS D / KS C / KS B / KS A
CN3 LOAD / S DATA / S CLK / UNSW 5V / REMOTE / 45V
26 SWITCH
CN4 AC ONLINE / GND
CN2 HiFi TRACKING / IND(L) / IND(R)
CN3
CN5 EDIT ON / AV 1 / R / COMP
CN1
27 DISPLAY
CN103 AC 5V / AC 5V / GND
CN104 UNSW 11V / REC LEVEL(L+) / REC LEVEL(R+) / REC LEVEL(L−) / REC LEVEL(R−) / ALC ON
CN107 OP 1 / OP 2 / OP 3 / GND(C) / S CASS LED / S-VHS LED
CN106 REMOTE / UNSW 12V / POWER LED
CN101
CN102 SWD 12V / SWD 5V / GND / −30V / GND(IND) / −30V(IND) / 45V
CN105 POWER LED / OP 3 / OP 3B / GND / NC / IND(R) / IND(L) / ALC ON
CN108 OP 2A / GND / OP 3A / OP 1
CN109 STEREO LED / BIL LED
CN110 SHARPNESS CTL / SHARPNESS MAX

I | J | K | L | N | O | P

6

3.5 SERVO BLOCK DIAGRAM

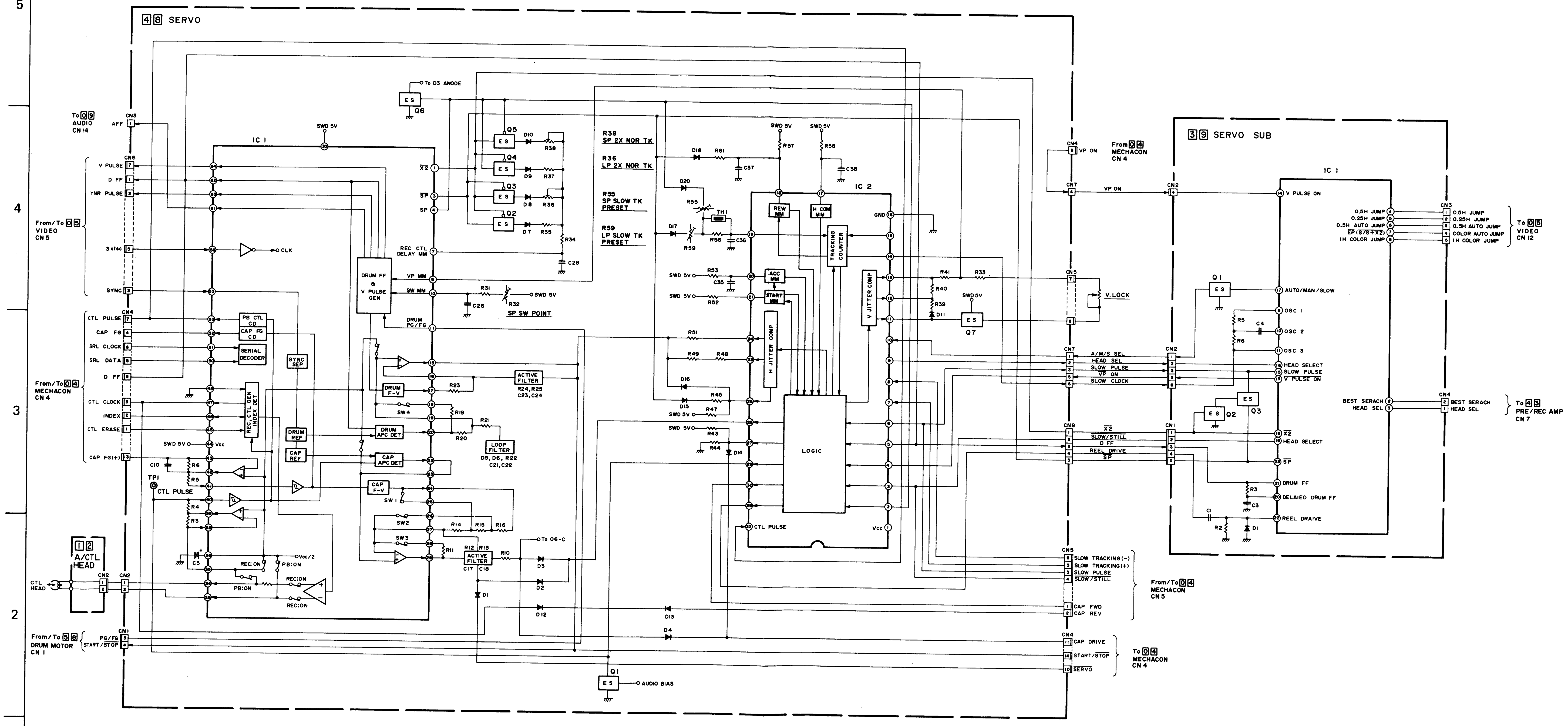
5

4

3

2

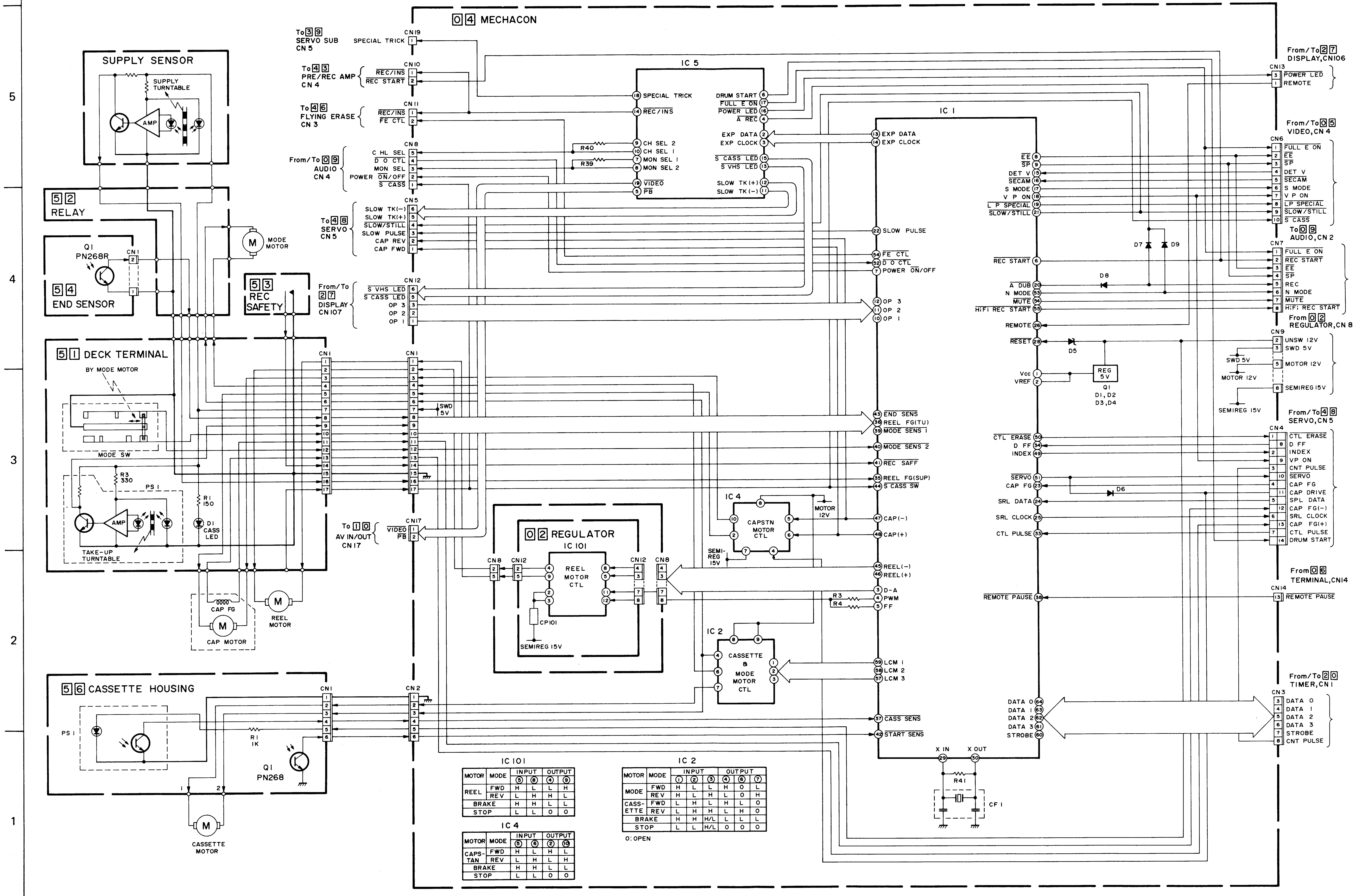
1



48 SERVO
39 SERVO SUB
IC 1
IC 2
IC 1
To 09 AUDIO CN14
From/To 05 VIDEO CN 5
From/To 04 MECHACON CN 4
From/To 58 DRUM MOTOR CN 1
12 A/CTL HEAD
CTL HEAD
CN3
CN6
CN4
CN2
CN1
AFF
V PULSE
D FF
YNR PULSE
3 xfsc
SYNC
CTL PULSE
CAP FG
SRL CLOCK
SRL DATA
D FF
CTL CLOCK
INDEX
CTL ERASE
CAP FG(+)
PG/FG
START/STOP
CLK
SWD 5V
TP1
CTL PULSE
PB CTL CD
CAP FG CD
SERIAL DECODER
SYNC SEP
REC CTL GEN INDEX DET
DRUM REF
CAP REF
DRUM FF & V PULSE GEN
DRUM F-V
DRUM APC DET
CAP APC DET
CAP F-V
ACTIVE FILTER R24,R25 C23,C24
LOOP FILTER D5, D6, R22 C21,C22
ACTIVE FILTER
REC:ON
PB:ON
Vcc/2
To Q6-C
To D3 ANODE
Q6
Q5
Q4
Q3
Q2
Q1
Q7
ES
AUDIO BIAS
REC CTL DELAY MM
VP MM
SW MM
DRUM PG/FG
SP SW POINT
R38 SP 2X NOR TK
R36 LP 2X NOR TK
R55 SP SLOW TK PRESET
R59 LP SLOW TK PRESET
REW MM
H COM MM
ACC MM
START MM
TRACKING COUNTER
V JITTER COMP
H JITTER COMP
LOGIC
TH1
V.LOCK
GND
Vcc
CN4 VP ON
From 04 MECHACON CN 4
CN7 VP ON
CN5
CN7 A/M/S SEL HEAD SEL SLOW PULSE VP ON SLOW CLOCK
CN8 X2 SLOW/STILL D FF REEL DRIVE SP
CN5 SLOW TRACKING(−) SLOW TRACKING(+) SLOW PULSE SLOW/STILL
From/To 04 MECHACON CN5
CAP FWD
CAP REV
CN4 CAP DRIVE START/STOP SERVO
To 04 MECHACON CN 4
V PULSE ON
AUTO/MAN/SLOW
OSC 1
OSC 2
OSC 3
HEAD SELECT
SLOW PULSE
V PULSE ON
X2
HEAD SELECT
SP
DRUM FF
DELAIED DRUM FF
REEL DRAIVE
0.5H JUMP
0.25H JUMP
0.5H AUTO JUMP
EP(S/S+X2)
1H COLOR JUMP
CN3 0.5H JUMP 0.25H JUMP 0.5H AUTO JUMP COLOR AUTO JUMP 1H COLOR JUMP
To 05 VIDEO CN 12
BEST SERACH HEAD SEL
CN4 BEST SERACH HEAD SEL
To 45 PRE/REC AMP CN 7

A B C D E F G H

3.6 MECHACON BLOCK DIAGRAM


6
5
4
3
2
1
A
B
C
E
F
G
H
SUPPLY SENSOR
SUPPLY TURNTABLE
AMP
52 RELAY
Q1 PN268R
CN1
54 END SENSOR
MODE MOTOR
M
53 REC SAFETY
51 DECK TERMINAL
BY MODE MOTOR
MODE SW
R3 330
PS1
R1 150
D1 CASS LED
TAKE-UP TURNTABLE
CAP FG
CAP MOTOR
REEL MOTOR
56 CASSETTE HOUSING
PS1
R1 1K
Q1 PN268
CASSETTE MOTOR
04 MECHACON
To 39 SERVO SUB CN5
CN19
SPECIAL TRICK
To 43 PRE/REC AMP CN4
CN10
REC/INS
REC START
To 46 FLYING ERASE CN3
CN11
REC/INS
FE CTL
From/To 09 AUDIO CN4
CN8
C HL SEL
D O CTL
MON SEL
POWER ON/OFF
S CASS
To 48 SERVO CN5
CN5
SLOW TK(−)
SLOW TK(+)
SLOW/STILL
SLOW PULSE
CAP REV
CAP FWD
From/To 27 DISPLAY CN107
CN12
S VHS LED
S CASS LED
OP 3
OP 2
OP 1
CN1
SWD 5V
To 10 AV IN/OUT CN17
CN17
VIDEO
PB
CN2
IC 5
SPECIAL TRICK
REC/INS
CH SEL 2
CH SEL 1
MON SEL 1
MON SEL 2
VIDEO
PB
R40
R39
DRUM START
FULL E ON
POWER LED
A REC
EXP DATA
EXP CLOCK
S CASS LED
S VHS LED
SLOW TK(+)
SLOW TK(−)
IC 1
EXP DATA
EXP CLOCK
SLOW PULSE
FE CTL
D O CTL
POWER ON/OFF
OP 3
OP 2
OP 1
END SENS
REEL FG(TU)
MODE SENS 1
MODE SENS 2
REC SAFF
REEL FG(SUP)
S CASS SW
CAP(−)
CAP(+)
REEL(−)
REEL(+)
D-A
PWM
FF
R3
R4
LCM 1
LCM 2
LCM 3
CASS SENS
START SENS
X IN
X OUT
R41
CF1
EE
SP
DET V
SECAM
S MODE
V P ON
L P SPECIAL
SLOW/STILL
REC START
A DUB
N MODE
MUTE
HiFi REC START
REMOTE
RESET
D5
Vcc
VREF
REG 5V
Q1 D1, D2 D3, D4
CTL ERASE
D FF
INDEX
SERVO
CAP FG
SRL DATA
SRL CLOCK
CTL PULSE
D6
REMOTE PAUSE
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
D7
D8
D9
02 REGULATOR
IC 101
REEL MOTOR CTL
CN8
CN12
CP101
SEMIREG 15V
IC 4
CAPSTN MOTOR CTL
MOTOR 12V
SEMI-REG 15V
IC 2
CASSETTE & MODE MOTOR CTL
From/To 27 DISPLAY, CN106
CN13
POWER LED
REMOTE
From/To 05 VIDEO, CN4
CN6
FULL E ON
EE
SP
DET V
SECAM
S MODE
V P ON
LP SPECIAL
SLOW/STILL
S CASS
To 09 AUDIO, CN2
CN7
FULL E ON
REC START
EE
SP
REC
N MODE
MUTE
HiFi REC START
From 02 REGULATOR, CN8
CN9
UNSW 12V
SWD 5V
MOTOR 12V
SEMIREG 15V
SWD 5V
MOTOR 12V
SEMIREG 15V
From/To 48 SERVO, CN5
CN4
CTL ERASE
D FF
INDEX
VP ON
CNT PULSE
SERVO
CAP FG
CAP DRIVE
SPL DATA
CAP FG(−)
SRL CLOCK
CAP FG(+)
CTL PULSE
DRUM START
From 06 TERMINAL, CN14
CN14
REMOTE PAUSE
From/To 20 TIMER, CN1
CN3
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
CNT PULSE

IC 101

MOTOR	MODE	INPUT ⑤	INPUT ⑧	OUTPUT ④	OUTPUT ⑨
REEL	FWD	H	L	L	H
	REV	L	H	H	L
BRAKE		H	H	L	L
STOP		L	L	O	O

IC 4

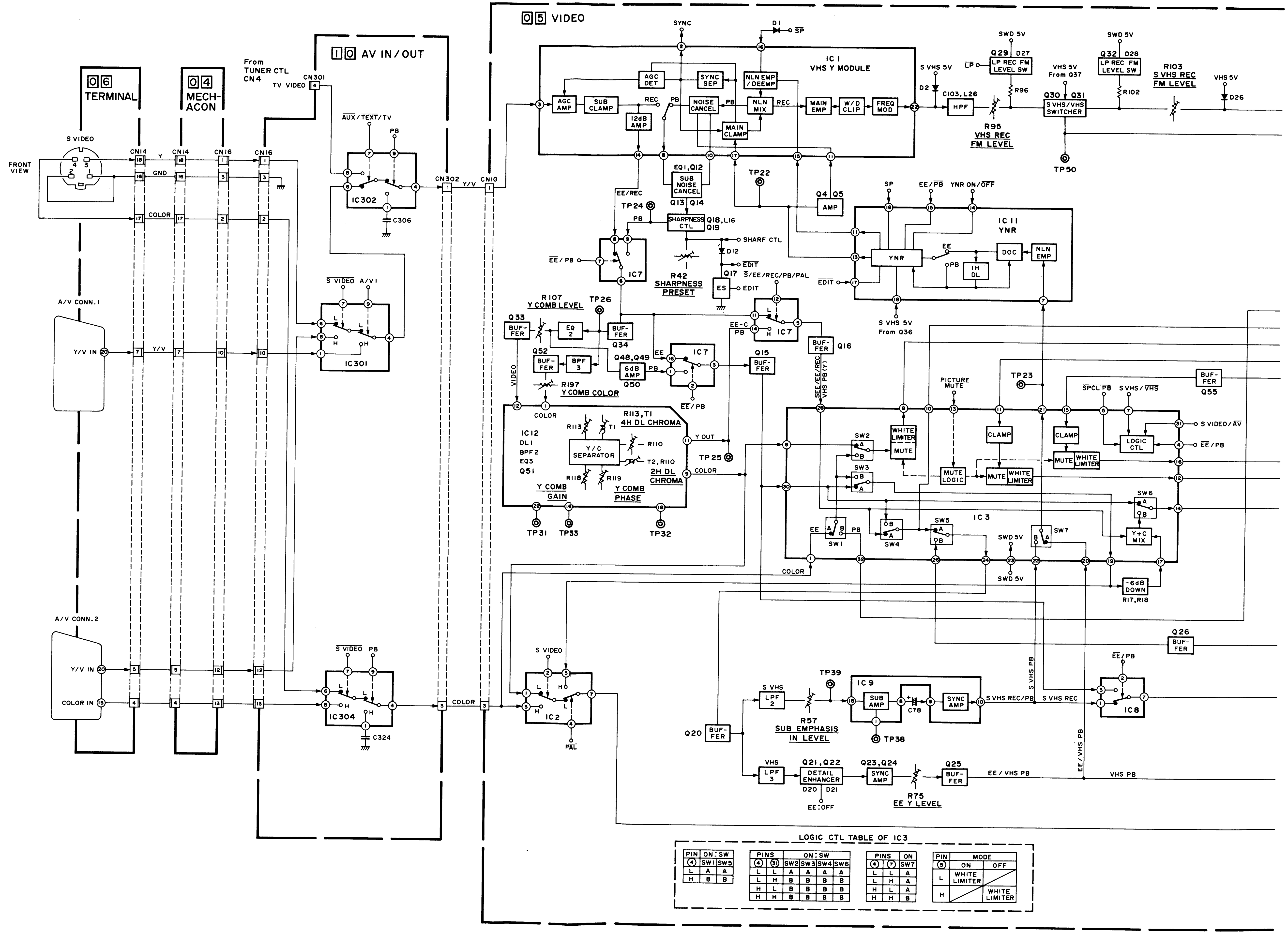
MOTOR	MODE	INPUT ⑤	INPUT ⑥	OUTPUT ②	OUTPUT ⑩
CAPS-TAN	FWD	H	L	H	L
	REV	L	H	L	H
BRAKE		H	H	L	L
STOP		L	L	O	O

IC 2

MOTOR	MODE	INPUT ①	INPUT ②	INPUT ③	OUTPUT ④	OUTPUT ⑥	OUTPUT ⑦
MODE	FWD	H	L	L	H	O	L
	REV	H	L	H	L	O	H
CASS-ETTE	FWD	L	H	L	H	L	O
	REV	L	H	H	L	H	O
BRAKE		H	H	H/L	L	L	L
STOP		L	L	H/L	O	O	O

O: OPEN

3.7 VIDEO BLOCK DIAGRAM



06 TERMINAL
04 MECH-ACON
10 AV IN/OUT
05 VIDEO
S VIDEO
FRONT VIEW
CN14
CN16
Y
GND
COLOR
A/V CONN.1
Y/V IN
Y/V
A/V CONN.2
COLOR IN
From TUNER CTL CN4
CN301
TV VIDEO
AUX/TEXT/TV
PB
IC302
C306
S VIDEO A/V1
IC301
S VIDEO PB
IC304
C324
CN302
Y/V
CN10
SYNC
D1
SP
IC1 VHS Y MODULE
AGC DET
SYNC SEP
NLN EMP /DEEMP
AGC AMP
SUB CLAMP
REC
NOISE CANCEL
NLN MIX
MAIN EMP
W/D CLIP
FREQ MOD
12dB AMP
MAIN CLAMP
EQ1,Q12
SUB NOISE CANCEL
Q13 Q14
SHARPNESS CTL
Q18,L16 Q19
SHARF CTL
D12
EDIT
Q17 S/EE/REC/PB/PAL
ES
R42 SHARPNESS PRESET
TP22
TP24
EE/REC
EE/PB
IC7
Q4 Q5
AMP
S VHS 5V
LP
D2
C103,L26
HPF
R95 VHS REC FM LEVEL
SWD 5V
Q29 D27
LP REC FM LEVEL SW
R96
VHS 5V From Q37
Q30 Q31
S VHS/VHS SWITCHER
TP50
Q32 D28
R102
R103 S VHS REC FM LEVEL
VHS 5V
D26
SP
EE/PB
YNR ON/OFF
IC11 YNR
YNR
EE
PB
1H DL
DOC
NLN EMP
EDIT
S VHS 5V From Q36
R107 Y COMB LEVEL
TP26
Q33 BUF-FER
EQ 2
BUF-FER Q34
Q52 BUF-FER
BPF 3
Q48,Q49
6dB AMP
Q50
R197 Y COMB COLOR
VIDEO
COLOR
IC12 DL1 BPF2 EQ3 Q51
R113,T1 4H DL CHROMA
Y/C SEPARATOR
R110
T2,R110 2H DL CHROMA
R118 R119
Y COMB GAIN
Y COMB PHASE
Y OUT
TP25
TP31 TP33 TP32
EE-C
Q15 BUF-FER
BUF-FER Q16
S/EE/EE/REC VHS PB(Y)
PICTURE MUTE
TP23
SPCL PB
S VHS/VHS
BUF-FER Q55
SW2
WHITE LIMITER
MUTE
CLAMP
MUTE LOGIC
LOGIC CTL
S VIDEO/AV
SW3
SW6
Y+C MIX
IC3
SW1
SW4
SW5
SW7
SWD 5V
-6dB DOWN
R17,R18
Q26 BUF-FER
S VIDEO
IC2
PAL
S VHS
LPF 2
R57 SUB EMPHASIS IN LEVEL
TP39
IC9
SUB AMP
C78
SYNC AMP
TP38
S VHS REC/PB
S VHS REC
S VHS PB
EE/VHS PB
IC8
Q20 BUF-FER
VHS
LPF 3
Q21,Q22 DETAIL ENHANCER
D20 D21
EE:OFF
Q23,Q24 SYNC AMP
R75 EE Y LEVEL
Q25 BUF-FER
EE/VHS PB
VHS PB
A
B
C
E
F
G
H
1
2
3
4
5
6

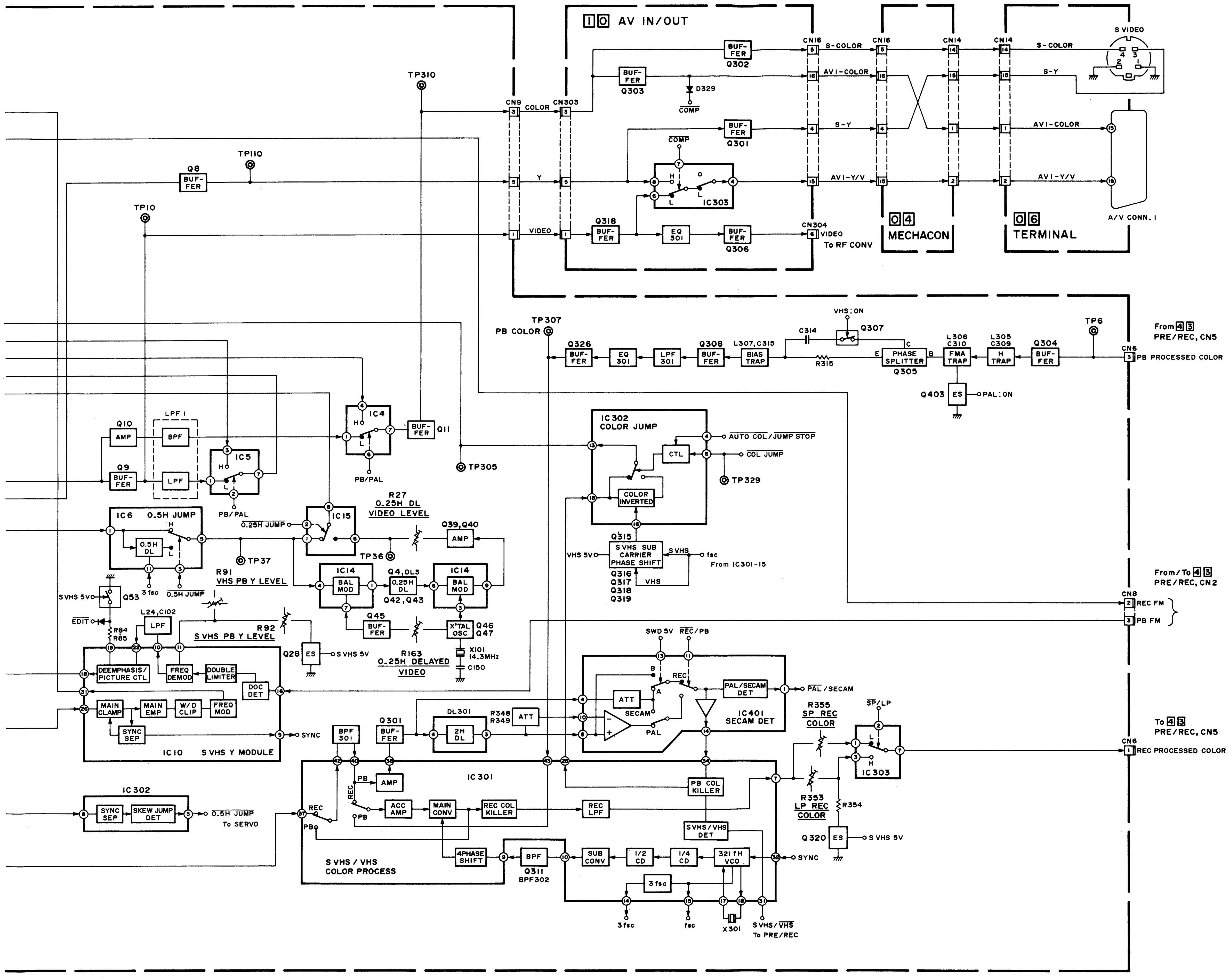
LOGIC CTL TABLE OF IC3

PIN	ON:SW	
④	SW1	SW5
L	A	A
H	B	B

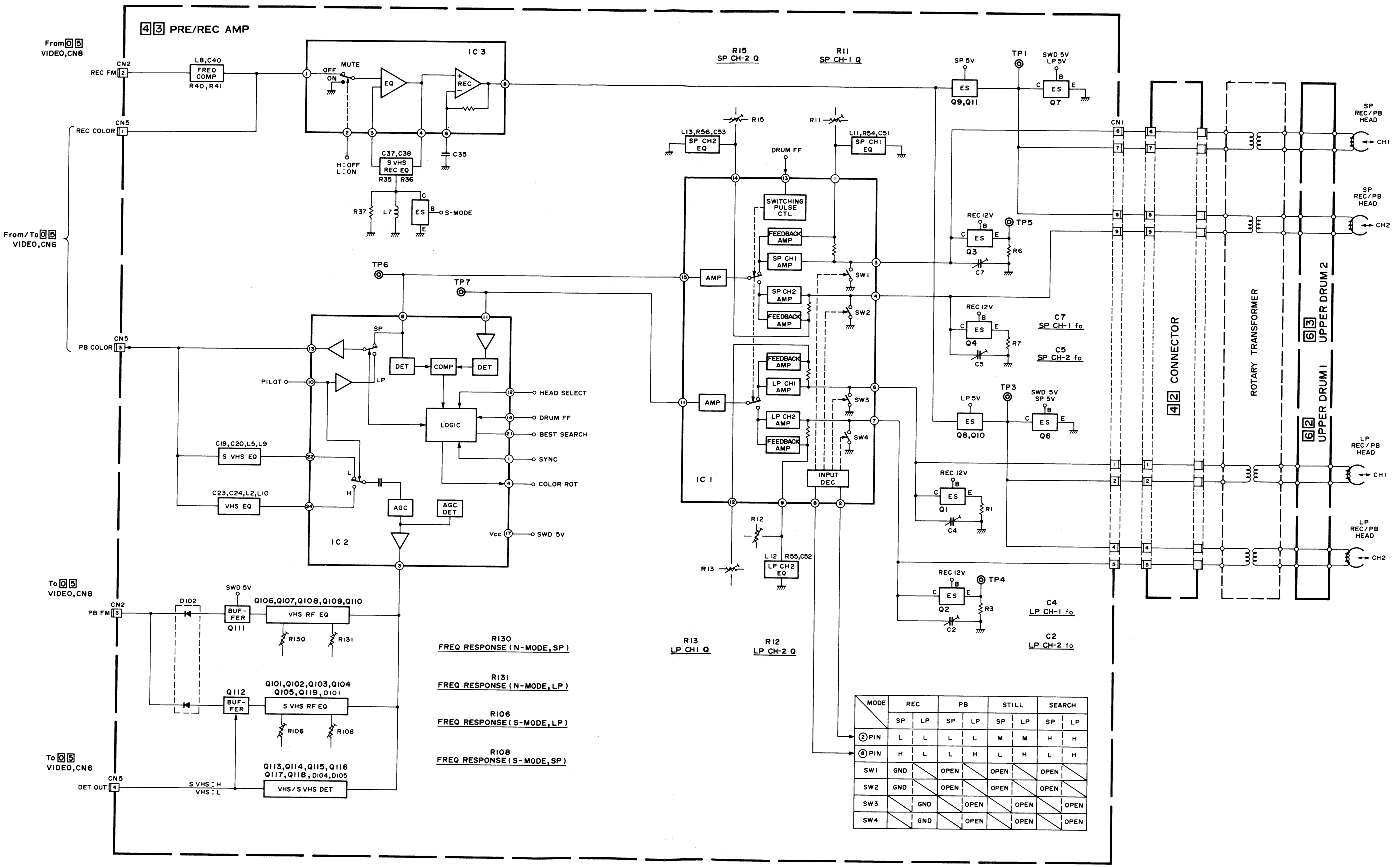
PINS		ON:SW			
④	㉛	SW2	SW3	SW4	SW6
L	L	A	A	A	A
L	H	B	B	B	B
H	L	B	B	B	B
H	H	B	B	B	B

PINS		ON
④	⑦	SW7
L	L	A
L	H	A
H	L	A
H	H	B

PIN	MODE	
⑤	ON	OFF
L	WHITE LIMITER	
H		WHITE LIMITER

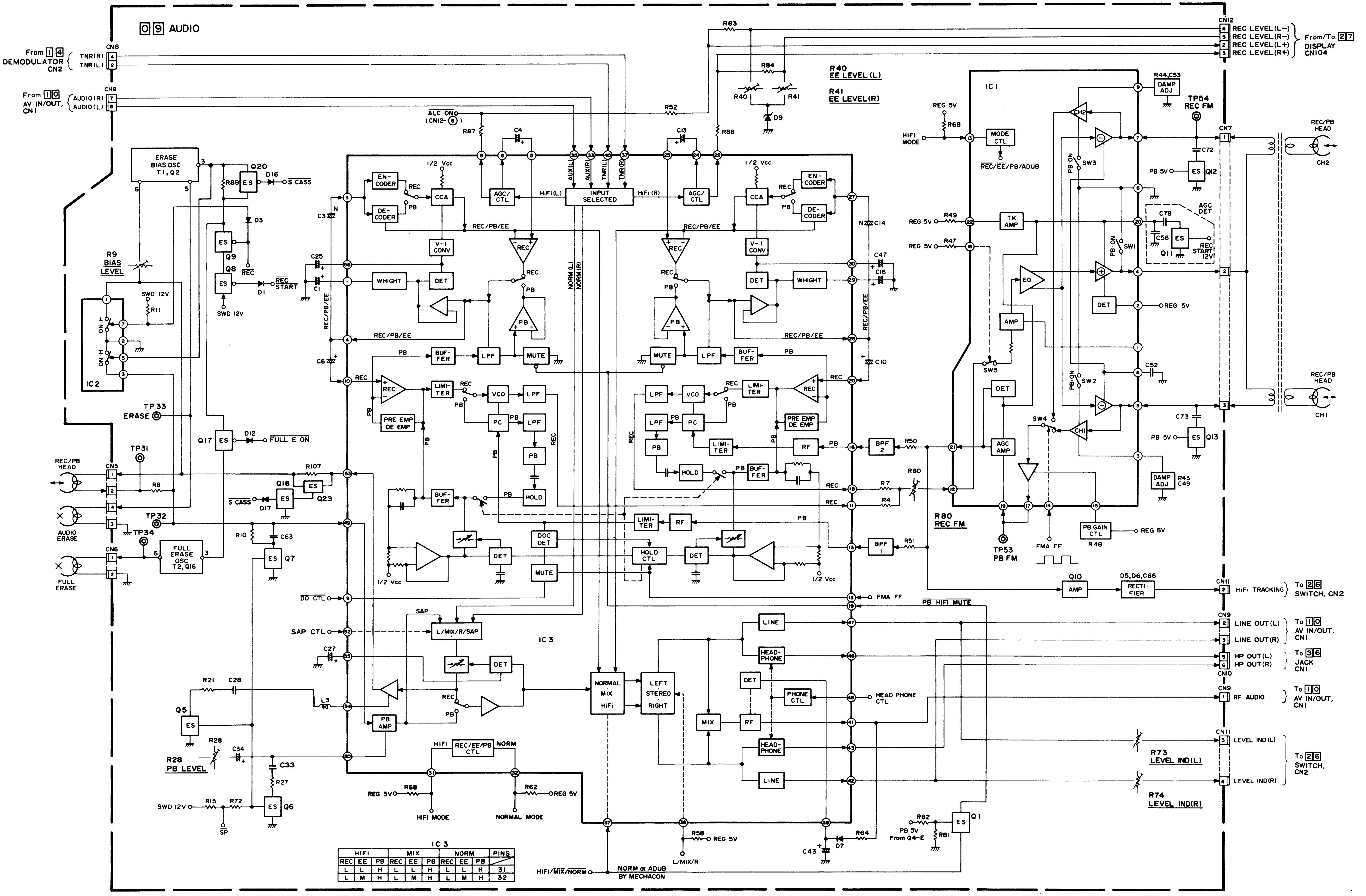

10 AV IN/OUT
04 MECHACON
06 TERMINAL
TP310
TP110
TP10
TP307
PB COLOR
TP305
TP329
TP37
TP36
TP6
CN9
CN303
CN16
CN14
CN304
CN6
CN8
COLOR
Y
VIDEO
S-COLOR
AV1-COLOR
S-Y
AV1-Y/V
VIDEO
To RF CONV
BUF-FER
Q302
Q303
Q301
Q318
Q306
D329
COMP
EQ 301
IC303
S VIDEO
A/V CONN_1
Q8
Q10
Q9
Q11
AMP
LPF1
BPF
LPF
IC4
IC5
PB/PAL
IC6 0.5H JUMP
0.5H DL
3 fsc
0.5H JUMP
IC15
0.25H JUMP
R27
0.25H DL VIDEO LEVEL
Q39,Q40
IC14
BAL MOD
Q4,DL3
0.25H DL
Q42,Q43
Q45
X'TAL OSC
Q46
Q47
X101
14.3MHz
C150
R163
0.25H DELAYED VIDEO
R91
VHS PB Y LEVEL
R92
S VHS PB Y LEVEL
Q28
ES
S VHS 5V
Q53
EDIT
R84
R85
L24,C102
DEEMPHASIS/PICTURE CTL
FREQ DEMOD
DOUBLE LIMITER
DOC DET
MAIN CLAMP
MAIN EMP
W/D CLIP
FREQ MOD
SYNC SEP
IC10 S VHS Y MODULE
SYNC
IC302
SKEW JUMP DET
0.5H JUMP
To SERVO
Q326
LPF 301
Q308
L307,C315
BIAS TRAP
C314
R315
VHS:ON
Q307
PHASE SPLITTER
Q305
L306
C310
FMA TRAP
L305
C309
H TRAP
Q304
Q403
PAL:ON
From 43
PRE/REC, CN5
PB PROCESSED COLOR
IC302 COLOR JUMP
AUTO COL/JUMP STOP
COL JUMP
CTL
COLOR INVERTED
Q315
S VHS SUB CARRIER PHASE SHIFT
VHS 5V
S VHS
fsc
From IC301-15
Q316
Q317
Q318
Q319
VHS
From/To 43
PRE/REC, CN2
REC FM
PB FM
SWD 5V
REC/PB
ATT
SECAM
PAL
PAL/SECAM DET
IC401 SECAM DET
PAL/SECAM
BPF 301
Q301
DL301
2H DL
R348
R349
IC301
PB
REC
ACC AMP
MAIN CONV
REC COL KILLER
REC LPF
PB COL KILLER
SVHS/VHS DET
4PHASE SHIFT
Q311
BPF302
SUB CONV
1/2 CD
1/4 CD
321 fH VCO
3 fsc
fsc
X301
S VHS/VHS
To PRE/REC
S VHS / VHS COLOR PROCESS
R355
SP REC COLOR
R353
LP REC COLOR
R354
Q320
SP/LP
IC303
To 43
PRE/REC, CN5
REC PROCESSED COLOR
I
J
K
L
N
O
P

3.8 PRE/REC AMP BLOCK DIAGRAM


43 PRE/REC AMP
From 05 VIDEO,CN8
CN2
REC FM 2
CN5
REC COLOR 1
From/To 05 VIDEO,CN6
CN5
PB COLOR 3
To 05 VIDEO,CN8
CN2
PB FM 3
To 05 VIDEO,CN6
CN5
DET OUT 4
L8,C40
FREQ COMP
R40,R41
IC 3
MUTE
OFF
ON
EQ
REC
H : OFF
L : ON
C37,C38
S VHS REC EQ
R35 R36
C35
R37
L7
ES
S-MODE
TP6
TP7
IC 2
SP
LP
PILOT
DET
COMP
LOGIC
AGC
AGC DET
HEAD SELECT
DRUM FF
BEST SEARCH
SYNC
COLOR ROT
Vcc
SWD 5V
C19,C20,L5,L9
S VHS EQ
C23,C24,L2,L10
VHS EQ
D102
SWD 5V
BUF-FER
Q111
Q106,Q107,Q108,Q109,Q110
VHS RF EQ
R130
R131
Q112
Q101,Q102,Q103,Q104
Q105,Q119,D101
S VHS RF EQ
R106
R108
Q113,Q114,Q115,Q116
Q117,Q118,D104,D105
VHS/S VHS DET
S VHS : H
VHS : L
R130
FREQ RESPONSE (N-MODE, SP)
R131
FREQ RESPONSE (N-MODE, LP)
R106
FREQ RESPONSE (S-MODE, LP)
R108
FREQ RESPONSE (S-MODE, SP)
R15
SP CH-2 Q
R11
SP CH-1 Q
L13,R56,C53
SP CH2 EQ
L11,R54,C51
SP CH1 EQ
DRUM FF
IC 1
SWITCHING PULSE CTL
FEEDBACK AMP
SP CH1 AMP
SP CH2 AMP
LP CH1 AMP
LP CH2 AMP
AMP
SW1
SW2
SW3
SW4
INPUT DEC
R12
R13
L12
R55,C52
LP CH2 EQ
R13
LP CH1 Q
R12
LP CH-2 Q
SP 5V
ES
Q9,Q11
TP1
SWD 5V
LP 5V
Q7
REC 12V
TP5
Q3
R6
C7
Q4
R7
C5
C7
SP CH-1 fo
C5
SP CH-2 fo
LP 5V
Q8,Q10
TP3
SWD 5V
SP 5V
Q6
Q1
R1
C4
TP4
Q2
R3
C2
C4
LP CH-1 fo
C2
LP CH-2 fo
CN1
42 CONNECTOR
ROTARY TRANSFORMER
63 UPPER DRUM 2
62 UPPER DRUM 1
SP REC/PB HEAD
CH1
CH2
LP REC/PB HEAD
A
B
C
E
F
G
H
1
2
3
4
5
6

MODE	REC		PB		STILL		SEARCH	
	SP	LP	SP	LP	SP	LP	SP	LP
② PIN	L	L	L	L	M	M	H	H
⑧ PIN	H	L	L	H	L	H	L	H
SW1	GND		OPEN		OPEN		OPEN	
SW2	GND		OPEN		OPEN		OPEN	
SW3		GND		OPEN		OPEN		OPEN
SW4		GND		OPEN		OPEN		OPEN

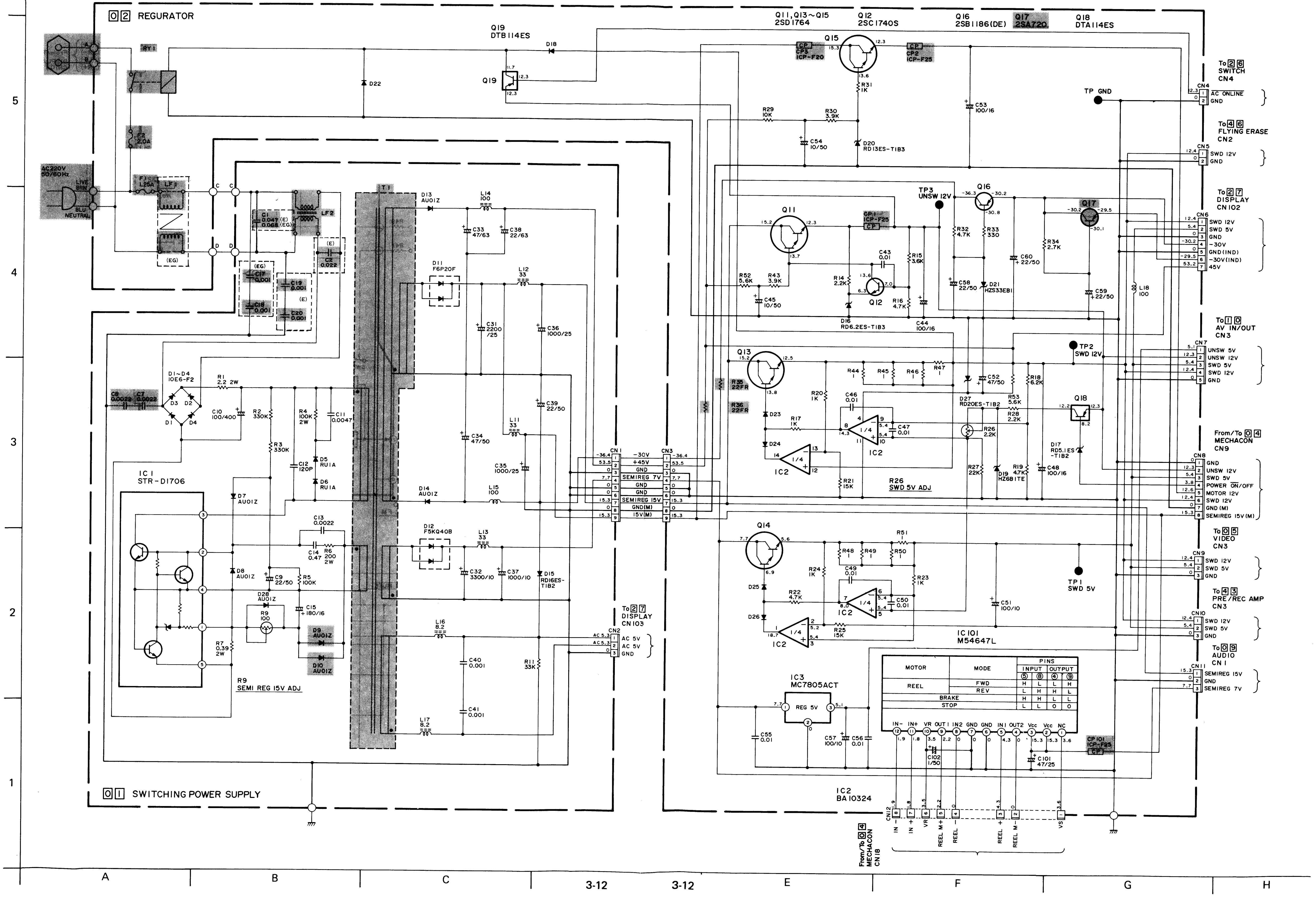
3.9 AUDIO BLOCK DIAGRAM


09 AUDIO
From 14 DEMODULATOR CN2
TNR(R)
TNR(L)
CN8
From 10 AV IN/OUT, CN1
AUDIO(R)
AUDIO(L)
CN9
ALC ON (CN12-6)
R83
R84
R40
R41
D9
R52
R87
R88
C4
C13
R40 EE LEVEL (L)
R41 EE LEVEL (R)
CN12
REC LEVEL(L−)
REC LEVEL(R−)
REC LEVEL(L+)
REC LEVEL(R+)
From/To 27 DISPLAY CN104
IC1
REG 5V
R68
HIFI MODE
MODE CTL
REC/EE/PB/ADUB
R44,C53
DAMP ADJ
TP54 REC FM
CN7
C72
PB 5V
ES
Q12
REC/PB HEAD
CH2
CH1
ERASE BIAS OSC T1, Q2
Q20
R89
D16
S CASS
D3
ES
Q9
Q8
REC
REC START
D1
SWD 12V
R9 BIAS LEVEL
R11
IC2
ON H
TP33 ERASE
TP31
Q17
D12
FULL E ON
REC/PB HEAD
CN5
R8
R107
Q18
Q23
S CASS
D17
AUDIO ERASE
TP32
TP34
R10
C63
Q7
FULL ERASE
CN6
FULL ERASE OSC T2, Q16
EN-CODER
DE-CODER
1/2 Vcc
CCA
AGC/CTL
INPUT SELECTED
HiFi (L)
HiFi (R)
AUX(L)
AUX(R)
TNR(L)
TNR(R)
REC/PB/EE
V-I CONV
REC
PB
WHIGHT
DET
C3
C25
C1
C6
C14
C47
C16
C10
N
BUF-FER
LPF
MUTE
LIMI-TER
VCO
PC
PRE EMP DE EMP
HOLD
RF
DOC DET
HOLD CTL
NORM (L)
NORM (R)
DO CTL
SAP CTL
SAP
L/MIX/R/SAP
IC3
C27
R21
C28
L3
Q5
R28
C34
C33
R27
R28 PB LEVEL
SWD 12V
R15
R72
SP
Q6
PB AMP
HIFI
REC/EE/PB CTL
NORM
R68
R62
REG 5V
HIFI MODE
NORMAL MODE
NORMAL MIX HiFi
LEFT STEREO RIGHT
LINE
HEAD-PHONE
PHONE CTL
MIX
HEAD PHONE CTL
R58
L/MIX/R
HIFI/MIX/NORM
NORM at ADUB BY MECHACON
C43
D7
R64
R82
R81
PB 5V From Q4-E
Q1
FMA FF
PB HIFI MUTE
REG 5V
R49
R47
TK AMP
SW1
SW2
SW3
SW4
SW5
PB ON
EQ
AMP
DET
AGC AMP
C78
C56
Q11
AGC DET
REC START 12V
C52
C73
Q13
DAMP ADJ
R43 C49
BPF 2
BPF 1
R50
R7
R4
R80
R51
R80 REC FM
TP53 PB FM
FMA FF
PB GAIN CTL
R48
Q10
AMP
D5,D6,C66
RECTI-FIER
CN11
HiFi TRACKING
To 26 SWITCH, CN2
CN9
LINE OUT(L)
LINE OUT(R)
To 10 AV IN/OUT, CN1
HP OUT(L)
HP OUT(R)
CN10
To 36 JACK CN1
RF AUDIO
To 10 AV IN/OUT, CN1
LEVEL IND(L)
LEVEL IND(R)
R73 LEVEL IND(L)
R74 LEVEL IND(R)
To 26 SWITCH, CN2
6
5
4
3
2
1
A
B
C
E
F
G
H

IC 3

HIFI			MIX			NORM			PINS
REC	EE	PB	REC	EE	PB	REC	EE	PB	
L	L	H	L	L	H	L	L	H	31
L	M	H	L	M	H	L	M	H	32

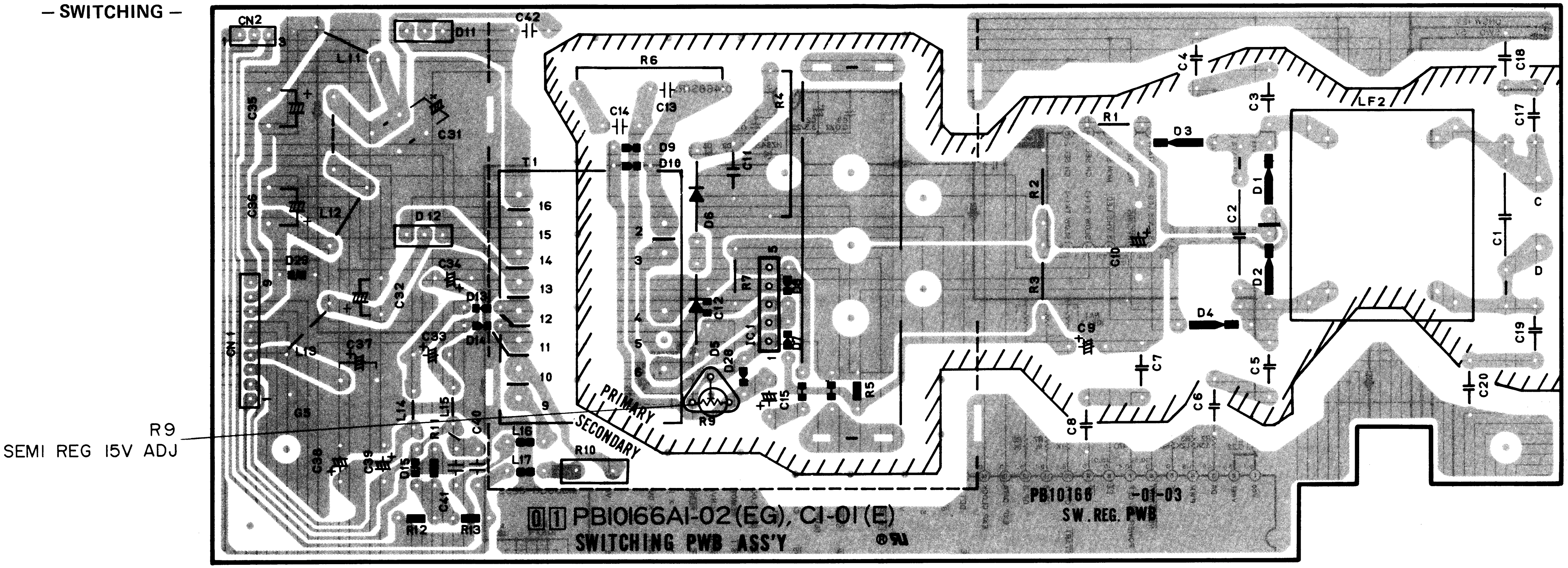
3.10 SWITCHING POWER SUPPLY AND REGULATOR SCHEMATIC DIAGRAMS


02 REGURATOR
01 SWITCHING POWER SUPPLY
RY1
F2 2.0A
F1 1.25A
AC220V 50/60Hz
LIVE BRN
BLU NEUTRAL
LF1
LF2
(EG)
C1 0.047 (E) 0.068 (EG)
C2 0.022
C17 0.001
C18 0.001
C19 0.001
C20 0.001
C8 0.0022
C7 0.0022
D1~D4 10E6-F2
R1 2.2 2W
C10 100/400
R2 330K
R3 330K
R4 100K 2W
C11 0.0047
C12 120P
D5 RU1A
D6 RU1A
D7 AU01Z
D8 AU01Z
IC1 STR-D1706
C13 0.0022
C14 0.47
R6 200 2W
C9 22/50
R5 100K
D28 AU01Z
R9 100
C15 180/16
D9 AU01Z
D10 AU01Z
R7 0.39 2W
R9 SEMI REG 15V ADJ
T1
D13 AU01Z
L14 100
C33 47/63
C38 22/63
D11 F6P20F
L12 33
C31 2200/25
C36 1000/25
C39 22/50
L11 33
C34 47/50
C35 1000/25
D14 AU01Z
L15 100
D12 F5KQ40B
L13 33
C32 3300/10
C37 1000/10
D15 RD16ES-T1B2
L16 8.2
C40 0.001
R11 33K
L17 8.2
C41 0.001
CN1
CN3
-30V
+45V
GND
SEMIREG 7V
GND
GND
SEMIREG 15V
GND(M)
15V(M)
To 2 7 DISPLAY CN103
CN2
AC 5V
AC 5V
GND
Q19 DTB114ES
D18
D22
Q11,Q13~Q15 2SD1764
Q12 2SC1740S
Q16 2SB1186(DE)
Q17 2SA720
Q18 DTA114ES
CP3 ICP-F20
CP2 ICP-F25
R31 1K
R29 10K
R30 3.9K
C54 10/50
D20 RD13ES-T1B3
C53 100/16
TP GND
TP3 UNSW 12V
CP1 ICP-F25
C43 0.01
R15 3.6K
R52 5.6K
R43 3.9K
C45 10/50
R14 2.2K
R16 4.7K
D16 RD6.2ES-T1B3
C44 100/16
R32 4.7K
R33 330
C60 22/50
R34 2.7K
C58 22/50
D21 HZS33EB1
C59 22/50
L18 100
TP2 SWD 12V
R35 22FR
R36 22FR
R44 1
R45 1
R46 1
R47 1
C52 47/50
R18 6.2K
D27 RD20ES-T1B2
R53 5.6K
R28 2.2K
R20 1K
C46 0.01
R17 1K
D23
D24
C47 0.01
IC2
R26 2.2K
D17 RD5.1ES-T1B2
R21 15K
R26 SWD 5V ADJ
R27 22K
D19 HZ6B1TE
R19 4.7K
C48 100/16
Q14
R51 1
R48 1
R49 1
R50 1
R24 1K
C49 0.01
R23 1K
TP1 SWD 5V
D25
R22 4.7K
C50 0.01
C51 100/10
D26
R25 15K
IC101 M54647L
IC3 MC7805ACT
REG 5V
C55 0.01
C57 100/10
C56 0.01
IN- IN+ VR OUT1 IN2 GND GND IN1 OUT2 Vcc Vcc NC
C102 1/50
C101 47/25
CP101 ICP-F25
IC2 BA10324
CN12
IN-
IN+
VR
REEL M+
REEL
REEL +
REEL M-
VS
From/To 0 4 MECHACON CN18
To 2 6 SWITCH CN4
CN4
AC ONLINE
GND
To 4 6 FLYING ERASE CN2
CN5
SWD 12V
GND
To 2 7 DISPLAY CN102
CN6
SWD 12V
SWD 5V
GND
-30V
GND(IND)
-30V(IND)
45V
To 1 0 AV IN/OUT CN3
CN7
UNSW 5V
UNSW 12V
SWD 5V
SWD 12V
GND
From/To 0 4 MECHACON CN9
CN8
GND
UNSW 12V
SWD 5V
POWER ON/OFF
MOTOR 12V
SWD 12V
GND (M)
SEMIREG 15V(M)
To 0 5 VIDEO CN3
CN9
SWD 12V
SWD 5V
GND
To 4 3 PRE/REC AMP CN3
CN10
SWD 12V
SWD 5V
GND
To 0 9 AUDIO CN1
CN11
SEMIREG 15V
GND
SEMIREG 7V
1
2
3
4
5
6
A
B
C
E
F
G
H

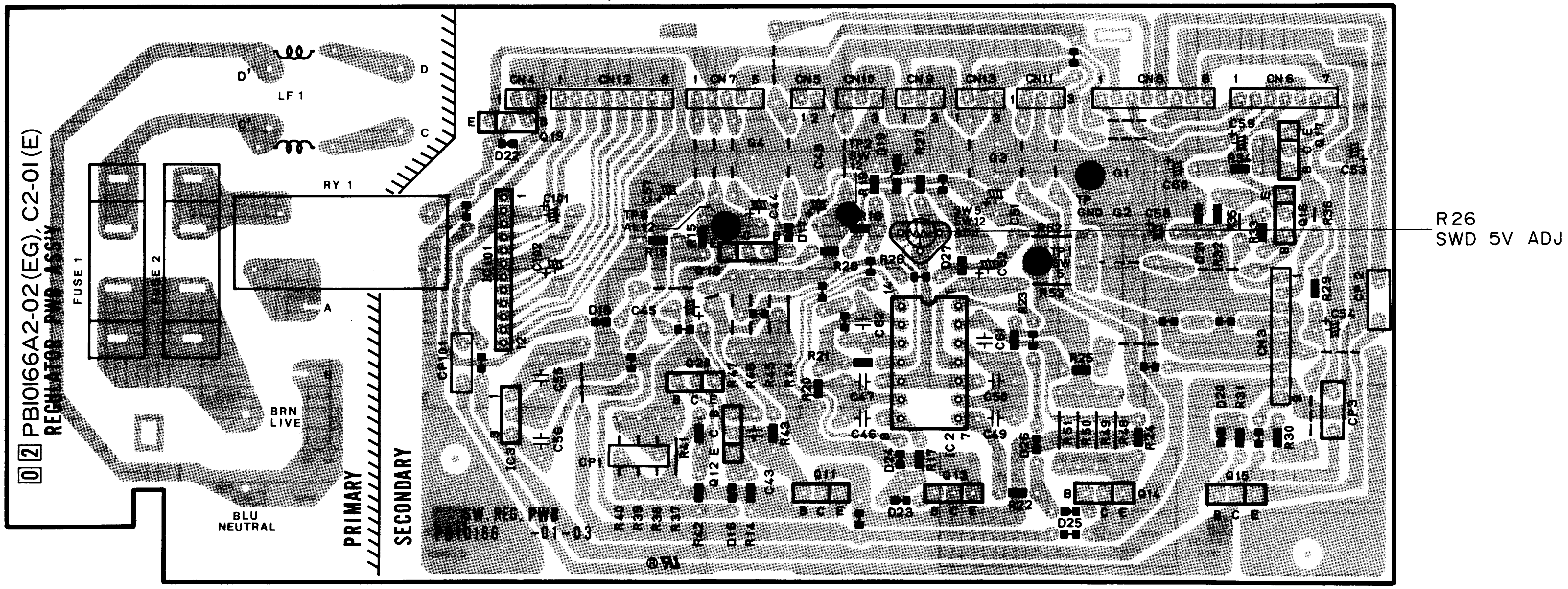
MOTOR	MODE	PINS			
		INPUT		OUTPUT	
		⑤	⑧	④	⑨
REEL	FWD	H	L	L	H
	REV	L	H	H	L
BRAKE		H	H	L	L
STOP		L	L	O	O

3.11 SWITCHING POWER SUPPLY AND REGULATOR CIRCUIT BOARDS

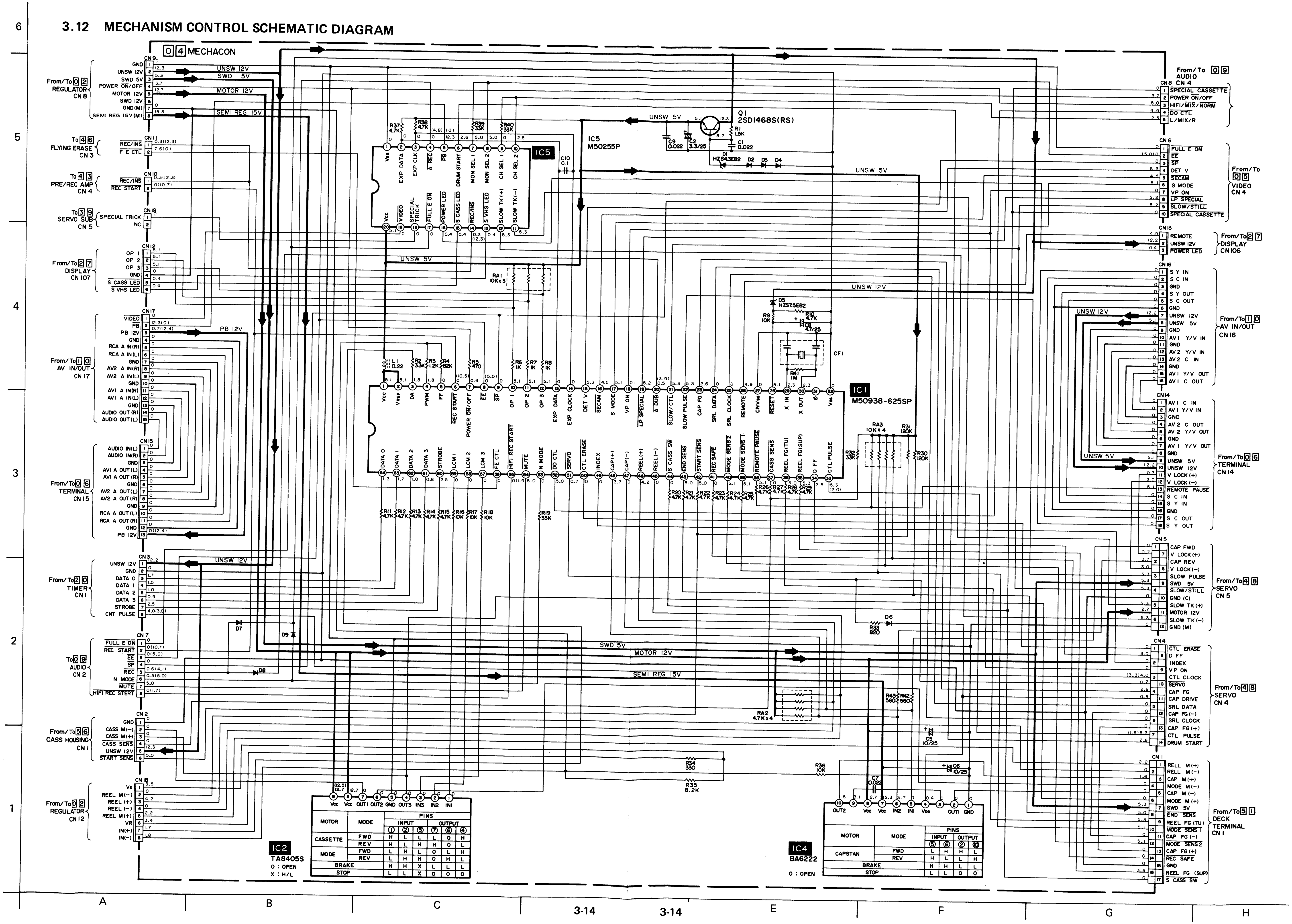
– SWITCHING –


R9
SEMI REG 15V ADJ
CN2
D11
C42
L11
C35
C31
R6
C14
C13
D9
D10
T1
C36
L12
D12
C34
C32
D29
D13
D14
C33
C37
L13
CN1
G5
L14
L15
R11
C40
C38
C39
D15
C41
R12
R13
L16
L17
R10
PRIMARY
SECONDARY
D6
C11
R4
R7
C12
IC1
D5
D28
C15
R5
R9
R1
D3
R2
R3
C10
C9
C7
C8
C6
D1
D2
C2
C4
C3
C5
D4
LF2
C18
C17
C1
C19
C20
C
D
01 PB10166A1-02(EG), C1-01(E)
SWITCHING PWB ASS'Y
PB10166 -01-03
SW. REG. PWB

– REGULATOR –


R26
SWD 5V ADJ
D'
LF 1
D
C'
C
RY 1
FUSE 1
FUSE 2
A
B
BRN
LIVE
BLU
NEUTRAL
02 PB10166A2-02(EG), C2-01(E)
REGULATOR PWB ASS'Y
PRIMARY
SECONDARY
SW. REG. PWB
PB10166 -01-03
CN4
CN12
CN7
CN5
CN10
CN9
CN13
CN11
CN8
CN6
Q19
D22
IC101
C101
C102
CP101
IC3
C55
C56
CP1
C57
TP3 AL12
R15
R16
Q18
D18
C45
G4
C48
C44
D17
TP2 SW 12
D19
R27
R19
R18
R28
R26
SW5 SW12 ADJ
D21
G3
G1
TP GND
G2
C58
C60
C59
R34
Q17
C53
Q16
R36
R35
R33
R32
R29
C54
CP2
CN3
CP3
R30
D20
R31
Q15
Q14
D25
R22
R52
R53
R23
C51
C52
C61
C62
IC2
C47
C46
C50
C49
R25
R51
R50
R49
R48
R24
D26
R17
D24
D23
Q13
Q11
Q12
Q20
R41
R46
R45
R44
R21
R20
R43
C43
R40
R39
R38
R37
R42
D16
R14

3.12 MECHANISM CONTROL SCHEMATIC DIAGRAM


6
5
4
3
2
1
A
B
C
E
F
G
H
04 MECHACON
From/To 02 REGULATOR CN 8
CN 9
GND
UNSW 12V
SWD 5V
POWER ON/OFF
MOTOR 12V
SWD 12V
GND (M)
SEMI REG 15V (M)
UNSW 12V
SWD 5V
MOTOR 12V
SEMI REG 15V
To 46 FLYING ERASE CN 3
CN 11
REC/INS
F E CTL
To 43 PRE/REC AMP CN 4
CN 10
REC/INS
REC START
To 39 SERVO SUB CN 5
CN 19
SPECIAL TRICK
NC
From/To 27 DISPLAY CN 107
CN 12
OP 1
OP 2
OP 3
GND
S CASS LED
S VHS LED
From/To 10 AV IN/OUT CN 17
CN 17
VIDEO
PB
PB 12V
GND
RCA A IN(R)
RCA A IN(L)
GND
AV2 A IN(R)
AV2 A IN(L)
GND
AV1 A IN(R)
AV1 A IN(L)
GND
AUDIO OUT (R)
AUDIO OUT (L)
PB 12V
From/To 06 TERMINAL CN 15
CN 15
AUDIO IN(L)
AUDIO IN(R)
GND
AV1 A OUT (L)
AV1 A OUT (R)
GND
AV2 A OUT(L)
AV2 A OUT (R)
GND
RCA A OUT (L)
RCA A OUT (R)
GND
PB 12V
From/To 20 TIMER CN1
CN 3
UNSW 12V
GND
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
CNT PULSE
D7
D8
D9
To 09 AUDIO CN 2
CN 7
FULL E ON
REC START
EE
SP
REC
N MODE
MUTE
HIFI REC START
From/To 56 CASS HOUSING CN 1
CN 2
GND
CASS M(−)
CASS M(+)
CASS SENS
UNSW 12V
START SENS
From/To 02 REGULATOR CN 12
CN 18
Vs
REEL M(−)
REEL (+)
REEL (−)
REEL M(+)
VR
IN(+)
IN(−)
IC5
M50255P
Vss
EXP DATA
EXP CLK
A REC
PB
DRUM START
MON SEL 1
MON SEL 2
CH SEL 1
CH SEL 2
Vcc
VIDEO
SPECIAL TRICK
FULL E ON
POWER LED
S CASS LED
REC/INS
S VHS LED
SLOW TK(+)
SLOW TK(−)
R37 4.7K
R38 4.7K
R39 33K
R40 33K
C10 0.1
RA1 10K×3
Q1 2SD1468S(RS)
R1 1.5K
C1 0.022
C9 0.022
C2 3.3/25
D1 HZS4.3EB2
D2
D3
D4
UNSW 5V
UNSW 12V
IC1
M50938-625SP
L1 0.22
R2 3.3K
R3 1.2K
R4 82K
R5 470
R6 1K
R7 1K
R8 1K
Vcc
VREF
DA
PWM
FF
REC START
POWER ON/OFF
EE
SP
OP 1
OP 2
OP 3
EXP DATA
EXP CLOCK
DET V
SECAM
S MODE
VP ON
LP SPECIAL
A DUB
SLOW/CTL
SLOW PULSE
CAP FG
SRL DATA
SRL CLOCK
REMOTE
CNVss
RESET
X IN
X OUT
Ø
Vss
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
LCM 1
LCM 2
LCM 3
FE CTL
HiFi REC START
MUTE
N MODE
DO CTL
SERVO
CTL ERASE
INDEX
CAP(+)
CAP(−)
REEL(+)
REEL(−)
S CASS SW
END SENS
START SENS
REC SAFE
MODE SENS 2
MODE SENS 1
REMOTE PAUSE
CASS SENS
REEL FG(TU)
REEL FG(SUP)
D FF
CTL PULSE
D5 HZS7.5EB2
R9 10K
R10 4.7K
C8 4.7/25
CF1
R41 1M
RA3 10K×4
R31 120K
R32 33K
R30 120K
R11 4.7K
R12 4.7K
R13 4.7K
R14 4.7K
R15 4.7K
R16 10K
R17 10K
R18 10K
R19 33K
R20 4.7K
R21 4.7K
R22 4.7K
R23 4.7K
R24 4.7K
R25 4.7K
R26 4.7K
R27 4.7K
R28 4.7K
R29 4.7K
R33 820
D6
SWD 5V
MOTOR 12V
SEMI REG 15V
RA2 4.7K×4
R43 560
R42 560
C5 10/25
R34 330
R35 8.2K
R36 10K
C6 10/25
C7 0.022
IC2
TA8405S
Vcc
Vcc
OUT1
OUT2
GND
OUT3
IN3
IN2
IN1
IC4
BA6222
OUT2
Vcc
Vcc
IN2
IN1
VDD
OUT1
GND
From/To 09 AUDIO CN 4
CN 8
SPECIAL CASSETTE
POWER ON/OFF
HIFI/MIX/NORM
DO CTL
L/MIX/R
From/To 05 VIDEO CN 4
CN 6
FULL E ON
EE
SP
DET V
SECAM
S MODE
VP ON
LP SPECIAL
SLOW/STILL
SPECIAL CASSETTE
From/To 27 DISPLAY CN 106
CN 13
REMOTE
UNSW 12V
POWER LED
From/To 10 AV IN/OUT CN 16
CN 16
S Y IN
S C IN
GND
S Y OUT
S C OUT
GND
UNSW 12V
UNSW 5V
GND
AV 1 Y/V IN
GND
AV 2 Y/V IN
AV 2 C IN
GND
AV 1 Y/V OUT
AV 1 C OUT
From/To 06 TERMINAL CN 14
CN 14
AV 1 C IN
AV 1 Y/V IN
GND
AV 2 C OUT
AV 2 Y/V OUT
GND
AV 1 Y/V OUT
GND
UNSW 5V
UNSW 12V
V LOCK (+)
V LOCK (−)
REMOTE PAUSE
S C IN
S Y IN
GND
S C OUT
S Y OUT
From/To 48 SERVO CN 5
CN 5
CAP FWD
V LOCK(+)
CAP REV
V LOCK(−)
SLOW PULSE
SWD 5V
SLOW/STILL
GND (C)
SLOW TK (+)
MOTOR 12V
SLOW TK (−)
GND (M)
From/To 48 SERVO CN 4
CN 4
CTL ERASE
D FF
INDEX
VP ON
CTL CLOCK
SERVO
CAP FG
CAP DRIVE
SRL DATA
CAP FG (−)
SRL CLOCK
CAP FG (+)
CTL PULSE
DRUM START
From/To 51 DECK TERMINAL CN 1
CN 1
RELL M(+)
RELL M(−)
CAP M(+)
MODE M(−)
CAP M (−)
MODE M (+)
SWD 5V
END SENS
REEL FG (TU)
MODE SENS 1
CAP FG (−)
MODE SENS 2
CAP FG (+)
REC SAFE
GND
REEL FG (SUP)
S CASS SW

IC2 TA8405S

MOTOR	MODE	PINS					
		INPUT			OUTPUT		
		①	②	③	⑦	⑥	④
CASSETTE	FWD	H	L	L	L	O	H
	REV	H	L	H	H	O	L
MODE	FWD	L	H	L	O	L	H
	REV	L	H	H	O	H	L
BRAKE		H	H	X	L	L	L
STOP		L	L	X	O	O	O

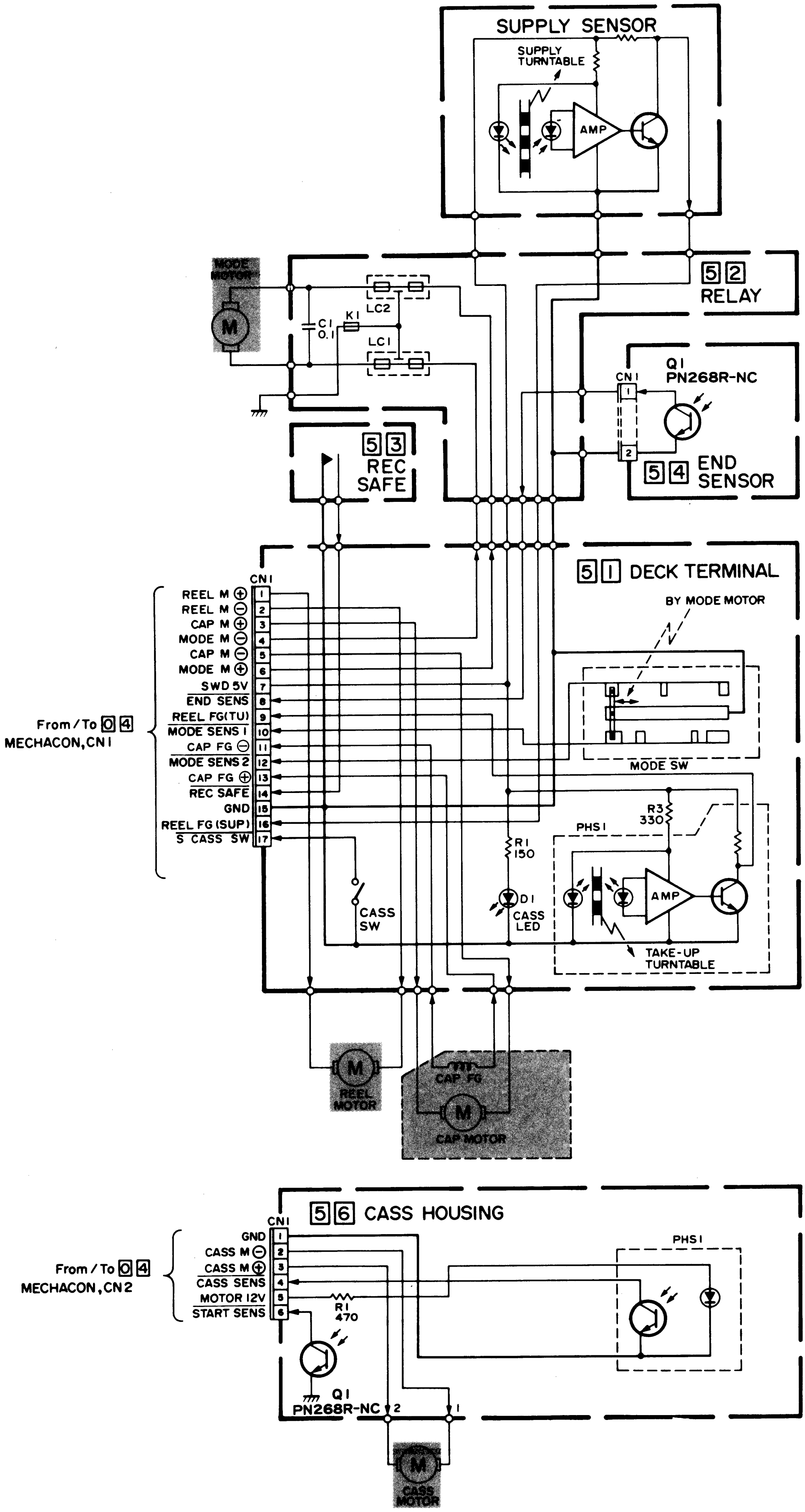
O : OPEN
X : H/L

IC4 BA6222

MOTOR	MODE	PINS			
		INPUT		OUTPUT	
		⑤	⑥	②	⑩
CAPSTAN	FWD	L	H	H	L
	REV	H	L	L	H
BRAKE		H	H	L	L
STOP		L	L	O	O

O : OPEN

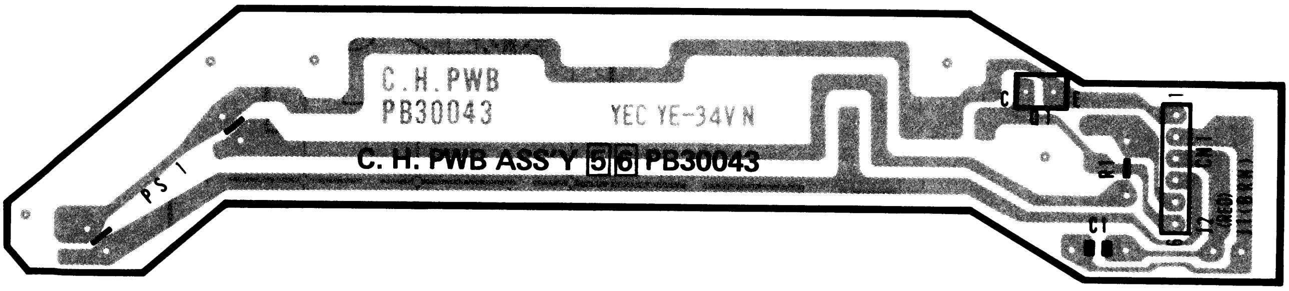
3.13 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY SCHEMATIC DIAGRAMS



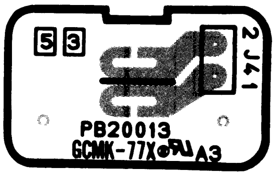
SUPPLY SENSOR
SUPPLY TURNTABLE
AMP
MODE MOTOR
M
C1 0.1
K1
LC2
LC1
5 2 RELAY
Q1 PN268R-NC
CN1
1
2
5 4 END SENSOR
5 3 REC SAFE
5 1 DECK TERMINAL
BY MODE MOTOR
MODE SW
CN1
REEL M ⊕ 1
REEL M ⊖ 2
CAP M ⊕ 3
MODE M ⊖ 4
CAP M ⊖ 5
MODE M ⊕ 6
SWD 5V 7
END SENS 8
REEL FG(TU) 9
MODE SENS 1 10
CAP FG ⊖ 11
MODE SENS 2 12
CAP FG ⊕ 13
REC SAFE 14
GND 15
REEL FG (SUP) 16
S CASS SW 17
From / To 0 4 MECHACON, CN1
R3 330
PHS1
R1 150
D1 CASS LED
CASS SW
AMP
TAKE-UP TURNTABLE
M
REEL MOTOR
CAP FG
M
CAP MOTOR
5 6 CASS HOUSING
CN1
GND 1
CASS M ⊖ 2
CASS M ⊕ 3
CASS SENS 4
MOTOR 12V 5
START SENS 6
From / To 0 4 MECHACON, CN2
R1 470
PHS1
Q1 PN268R-NC
2
1
M
CASS MOTOR

3.14 DECK TERMINAL, CASSETTE HOUSING, RELAY, END SENSOR AND REC SAFETY CIRCUIT BOARDS

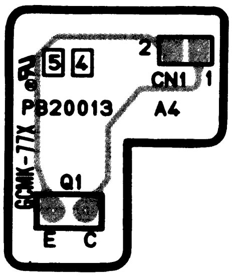
– CASSETTE HOUSING –


C.H.PWB
PB30043
YEC YE-34VN
C. H. PWB ASS'Y 5 6 PB30043
PS 1
C
E
Q1
R1
CN1
C1
1
6
(RED)
(BRN)

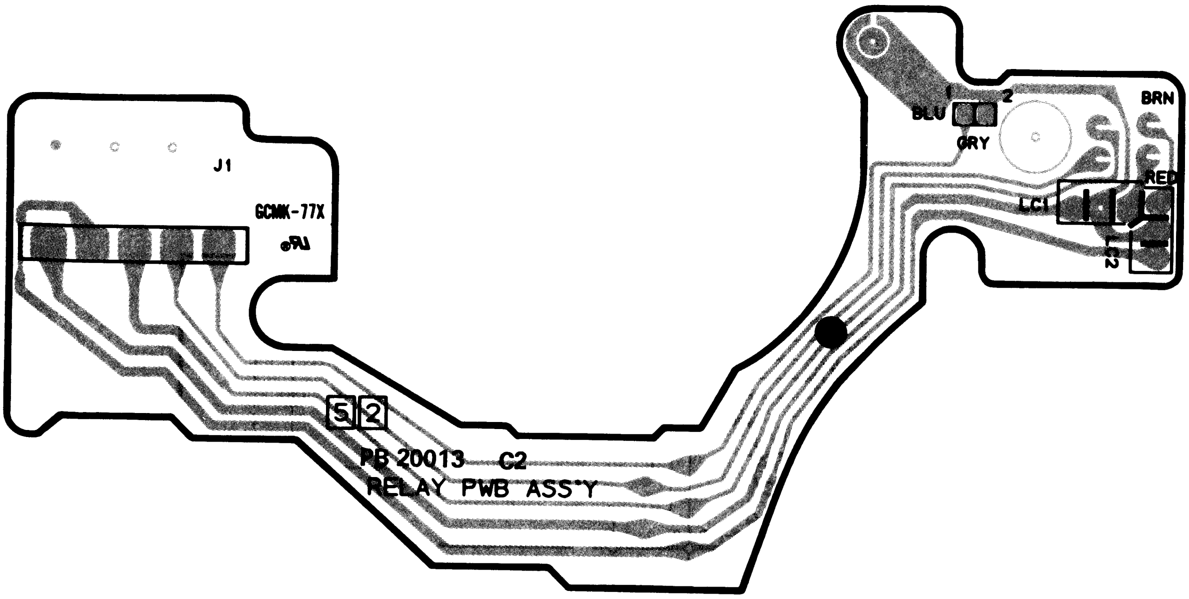
– REC SAFETY –


5 3
2 J41
PB20013
GCMK-77X A3

– END SENSOR –

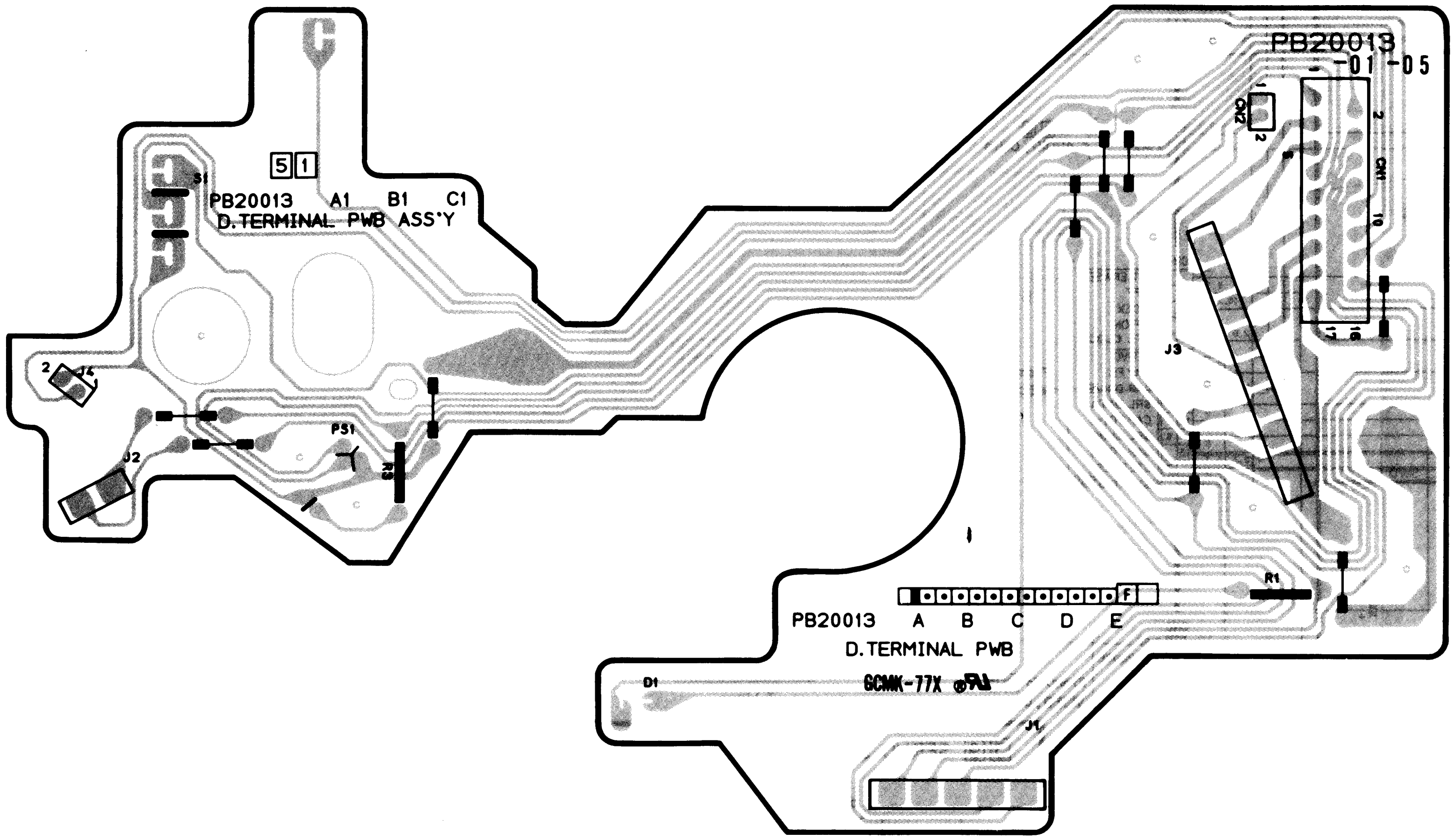

5 4
2
CN1 1
PB20013
A4
GCMK-77X
Q1
E C

– RELAY –


J1
GCMK-77X
1
2
BLU
GRY
BRN
RED
LC1
LC2
5 2
PB 20013 C2
RELAY PWB ASS'Y

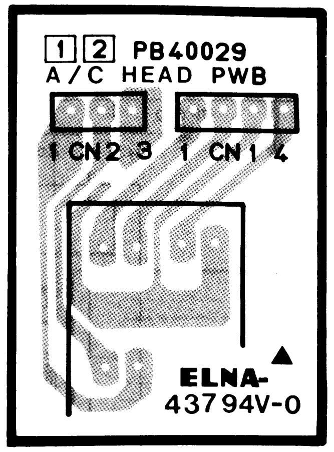
3.15 MECHANISM CONTROL AND AUDIO/CONTROL HEAD CIRCUIT BOARDS

– DECK TERMINAL –



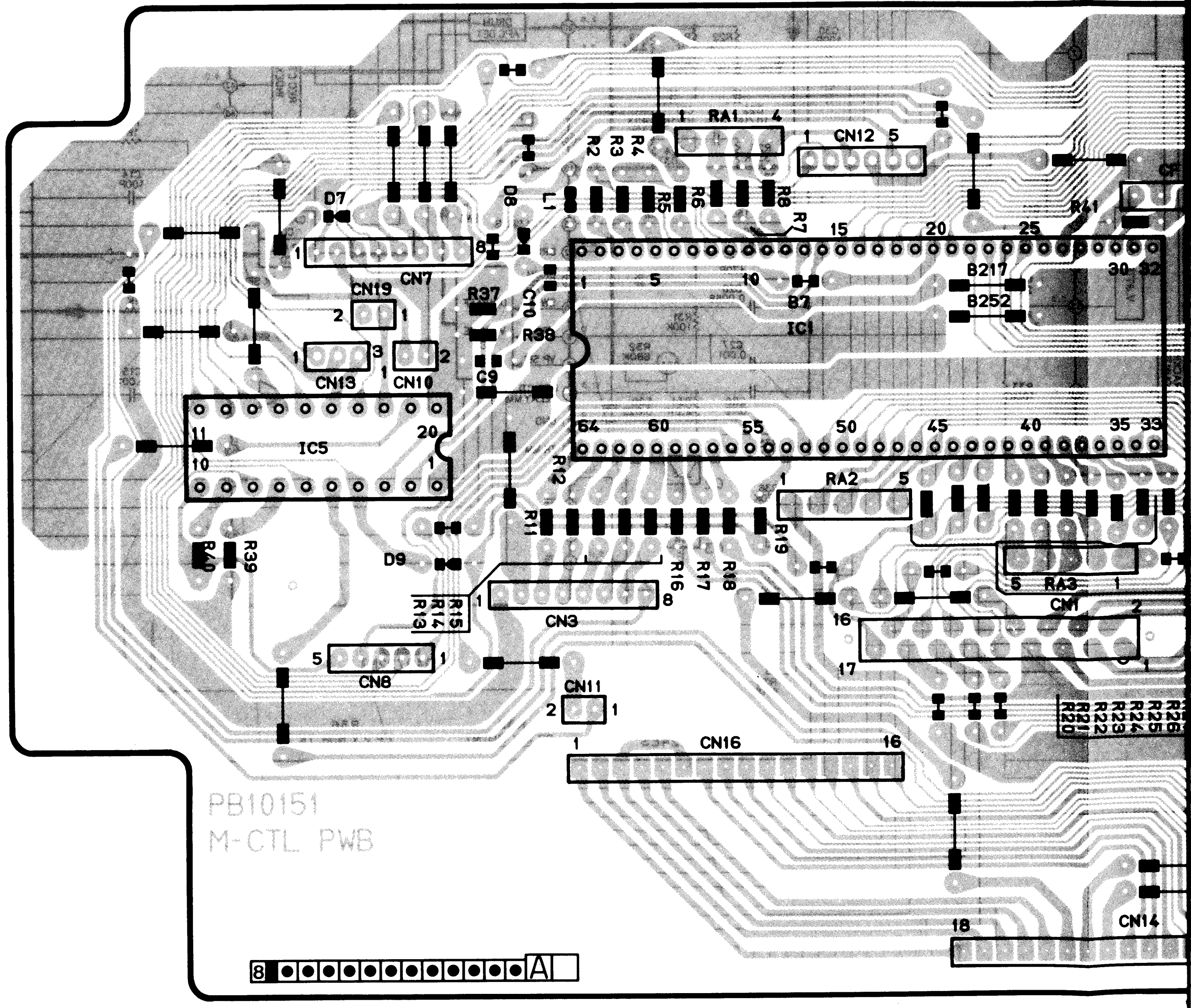
PB20013
-01 -05
5 1
PB20013 A1 B1 C1
D.TERMINAL PWB ASS'Y
PB20013 A B C D E
D.TERMINAL PWB
SCMK-77X
CN2
CN1
J1
J2
J3
R1
D1
PS1

– A/C HEAD –



1 2 PB40029
A/C HEAD PWB
1 CN2 3
1 CN1 4
ELNA-
43794V-0

– MECHACON –

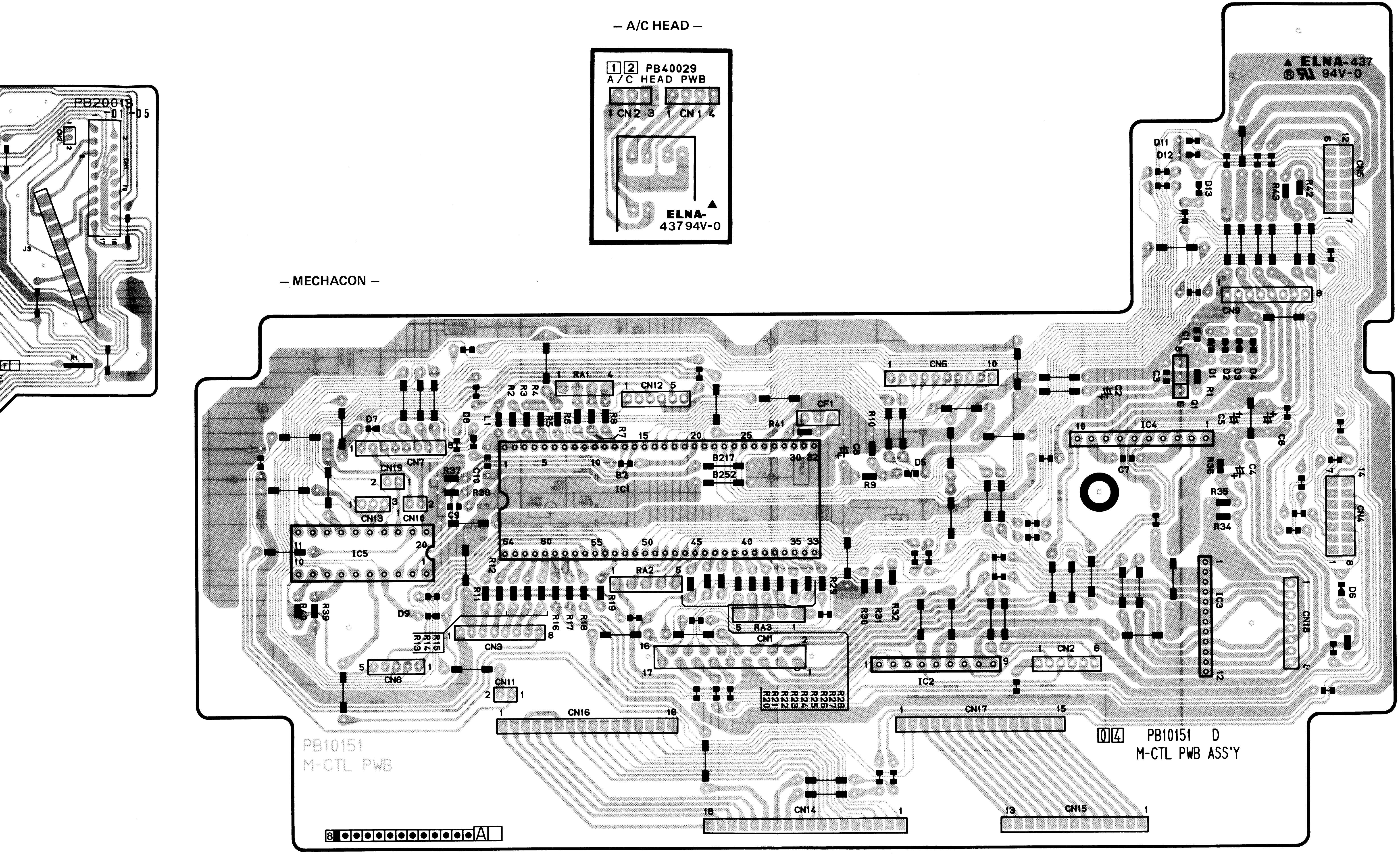


PB10151
M-CTL PWB
IC1
IC5
RA1
RA2
RA3
CN1
CN3
CN7
CN8
CN10
CN11
CN12
CN13
CN14
CN16
CN19
D7
D8
D9
L1
R2
R3
R4
R5
R6
R7
R8
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R37
R38
R39
R40
R41
C9
C10
B2
B217
B252
8
A

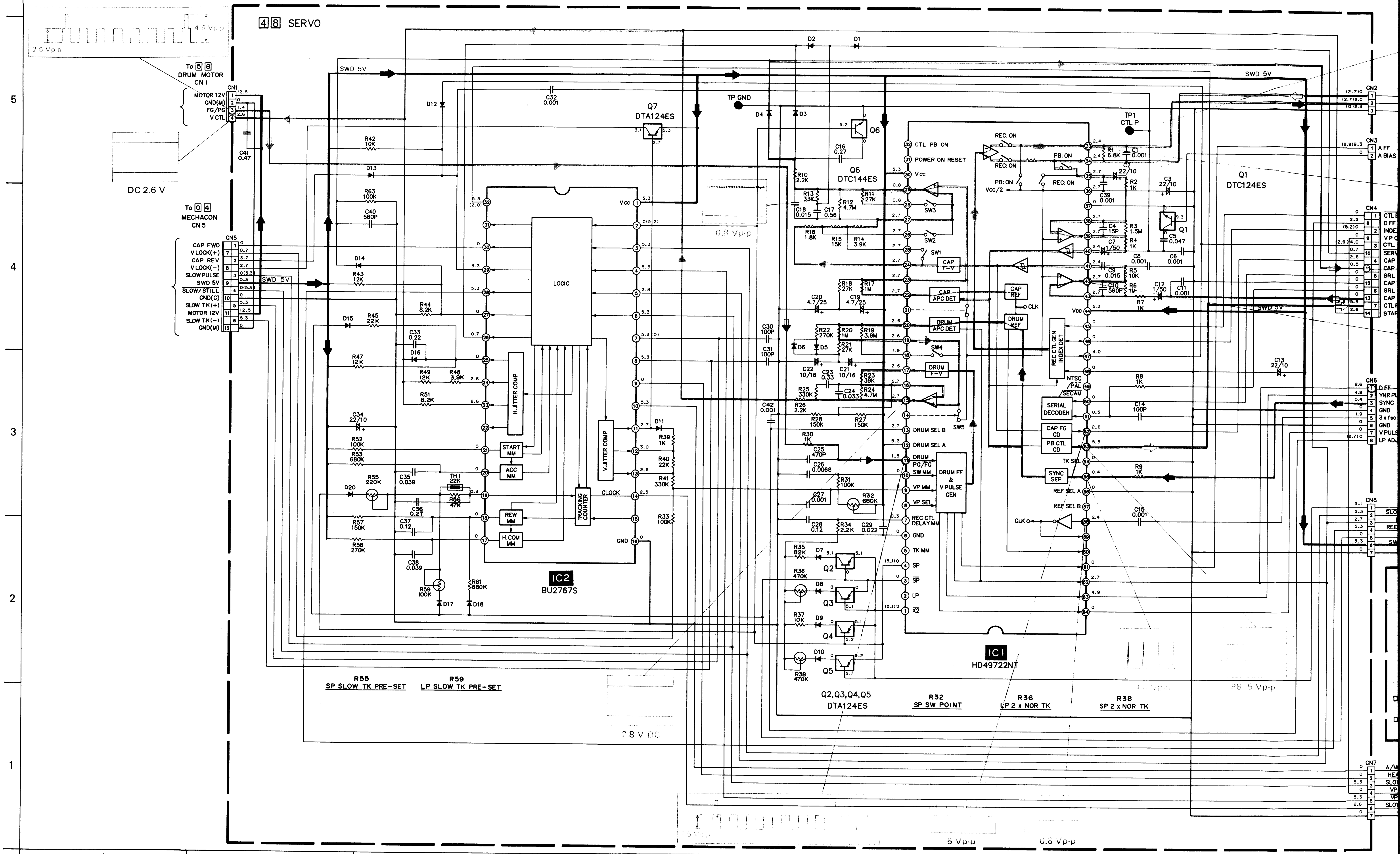
3.15 MECHANISM CONTROL AND AUDIO/CONTROL HEAD CIRCUIT BOARDS

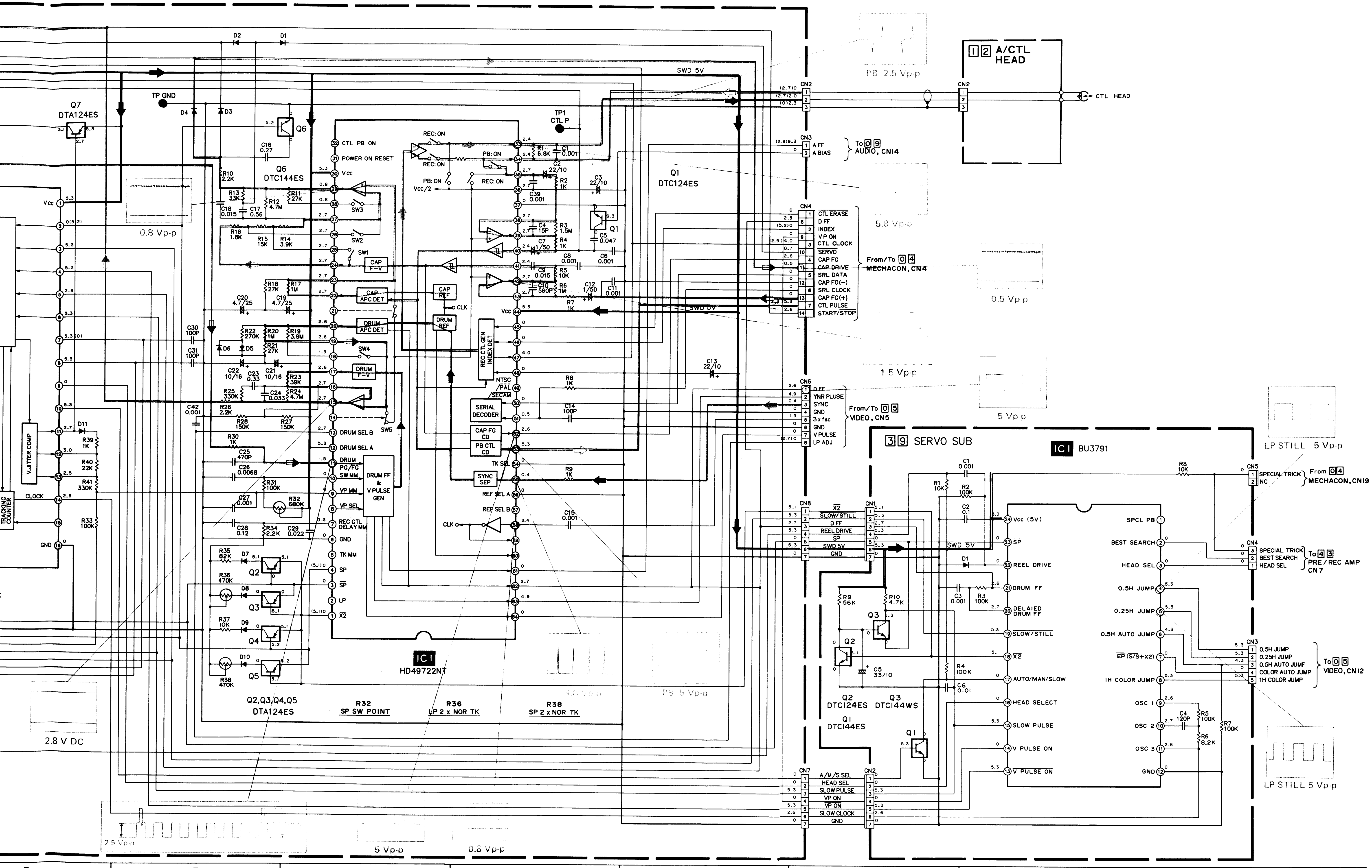
– A/C HEAD –

– MECHACON –


1 2 PB40029
A/C HEAD PWB
1 CN2 3
1 CN1 4
ELNA-
43794V-0
PB20013
-01-05
J3
R1
ELNA-437
94V-0
CN5
CN9
CN6
CN4
CN18
IC1
IC2
IC3
IC4
IC5
CN1
CN2
CN3
CN7
CN8
CN10
CN11
CN12
CN13
CN14
CN15
CN16
CN17
CN19
RA1
RA2
RA3
CF1
D1
D2
D3
D4
D5
D6
D7
D8
D9
D11
D12
D13
Q1
B217
B252
PB10151
M-CTL PWB
0 4 PB10151 D
M-CTL PWB ASS'Y
8 A

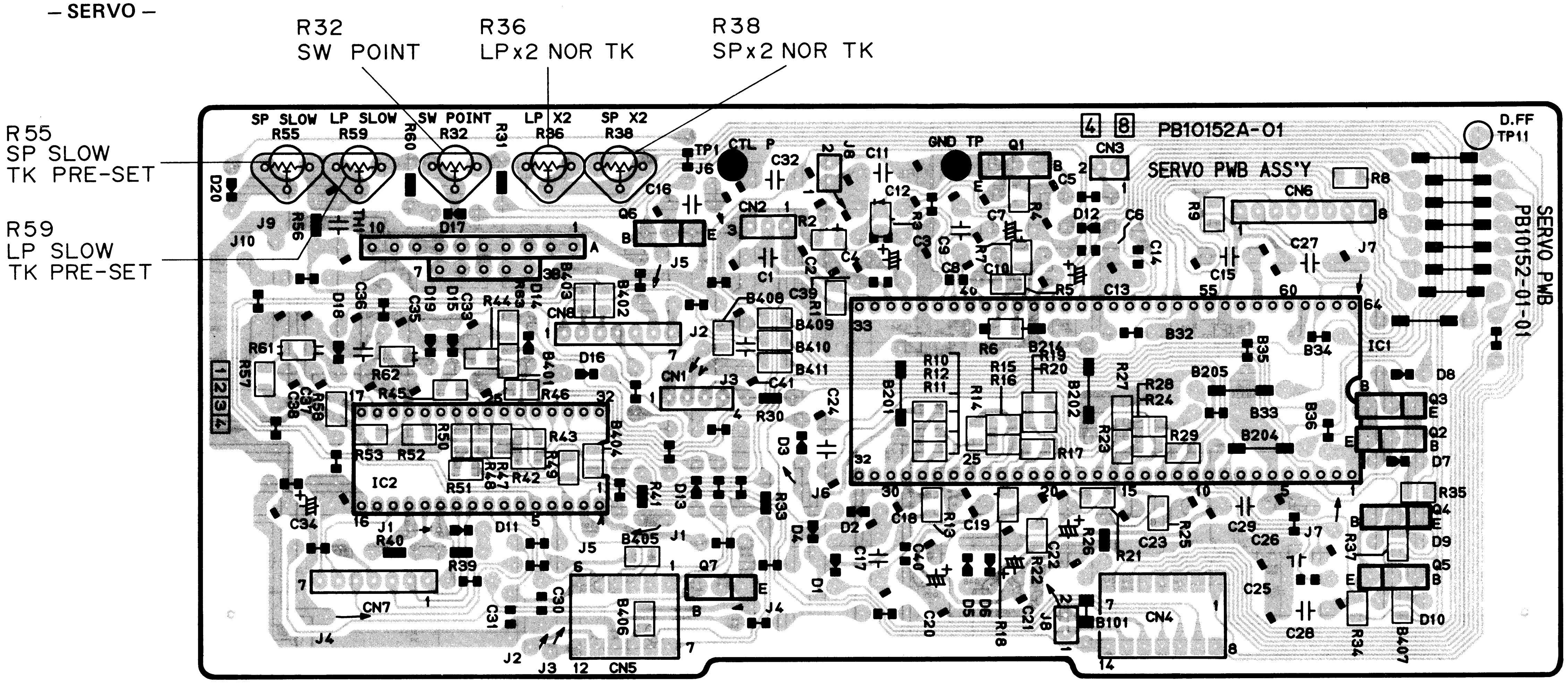
3.16 SERVO AND SERVO SUB SCHEMATIC DIAGRAMS


6
5
4
3
2
1
2.6 Vp-p
4.5 Vp-p
DC 2.6 V
48 SERVO
To 58 DRUM MOTOR CN1
CN1
MOTOR 12V
GND(M)
FG/PG
V CTL
C41 0.47
To 04 MECHACON CN5
CN5
CAP FWD
V LOCK(+)
CAP REV
V LOCK(-)
SLOW PULSE
SWD 5V
SLOW/STILL
GND(C)
SLOW TK(+)
MOTOR 12V
SLOW TK(-)
GND(M)
SWD 5V
C32 0.001
D12
Q7 DTA124ES
R42 10K
D13
R63 100K
C40 560P
D14
R43 12K
D15
R45 22K
R44 8.2K
C33 0.22
D16
R47 12K
R49 12K
R48 3.9K
R51 8.2K
C34 22/10
R52 100K
R53 680K
D20
R55 220K
C35 0.039
TH1 22K
R56 47K
C36 0.27
R57 150K
C37 0.12
R58 270K
C38 0.039
R59 100K
D17
R61 680K
D18
LOGIC
H.JITTER COMP
START MM
ACC MM
REW MM
H.COM MM
TRACKING COUNTER
V.JITTER COMP
CLOCK
Vcc
GND
D11
R39 1K
R40 22K
R41 330K
R33 100K
IC2
BU2767S
R55 SP SLOW TK PRE-SET
R59 LP SLOW TK PRE-SET
2.8 V DC
0.8 Vp-p
TP GND
D2
D1
D4
D3
Q6
C16 0.27
Q6 DTC144ES
R10 2.2K
R13 33K
R12 4.7M
R11 27K
C18 0.015
C17 0.56
R16 1.8K
R15 15K
R14 3.9K
C30 100P
C31 100P
R18 27K
R17 1M
C20 4.7/25
C19 4.7/25
R22 270K
R20 1M
R19 3.9M
D6
D5
R21 27K
C22 10/16
C23 0.33
C21 10/16
R23 39K
R25 330K
C24 0.033
R24 4.7M
C42 0.001
R26 2.2K
R28 150K
R27 150K
R30 1K
C25 470P
C26 0.0068
R31 100K
C27 0.001
R32 680K
C28 0.12
R34 2.2K
C29 0.022
R35 82K
D7
Q2
R36 470K
D8
Q3
R37 10K
D9
Q4
D10
R38 470K
Q5
Q2,Q3,Q4,Q5 DTA124ES
R32 SP SW POINT
R36 LP 2 x NOR TK
R38 SP 2 x NOR TK
CTL PB ON
POWER ON RESET
Vcc
SW3
SW2
SW1
CAP F-V
CAP APC DET
CAP REF
CLK
DRUM APC DET
DRUM REF
SW4
DRUM F-V
SW5
DRUM SEL B
DRUM SEL A
DRUM PG/FG
SW MM
VP MM
VP SEL
REC CTL DELAY MM
GND
TK MM
SP
SP
LP
X2
DRUM FF & V PULSE GEN
IC1
HD49722NT
REC:ON
PB:ON
Vcc/2
R1 6.8K
C1 0.001
C2 22/10
R2 1K
C3 22/10
C39 0.001
C4 15P
R3 1.5M
C7 1/50
R4 1K
C8 0.001
C6 0.001
C9 0.015
R5 10K
C10 560P
R6 1M
C12 1/50
C11 0.001
R7 1K
TP1 CTL P
Q1 DTC124ES
Q1
C5 0.047
REC CTL GEN INDEX DET
NTSC/PAL SECAM
SERIAL DECODER
CAP FG CD
PB CTL CD
TK SEL
SYNC SEP
REF SEL A
REF SEL B
C13 22/10
R8 1K
C14 100P
R9 1K
C15 0.001
SWD 5V
CN2
CN3
A FF
A BIAS
CN4
CTL
D FF
INDE
V P C
CTL
SERV
CAP
CAP
SRL
CAP
SRL
CAP
CTL
STAR
CN6
D FF
YNR PL
SYNC
GND
3 x fsc
GND
V PULS
LP ADJ
CN8
SLO
REE
SW
CN7
A/M
HEA
SLO
VP
VP
SLO
4.0 Vp-p
PB 5 Vp-p
2.5 Vp-p
5 Vp-p
0.8 Vp-p

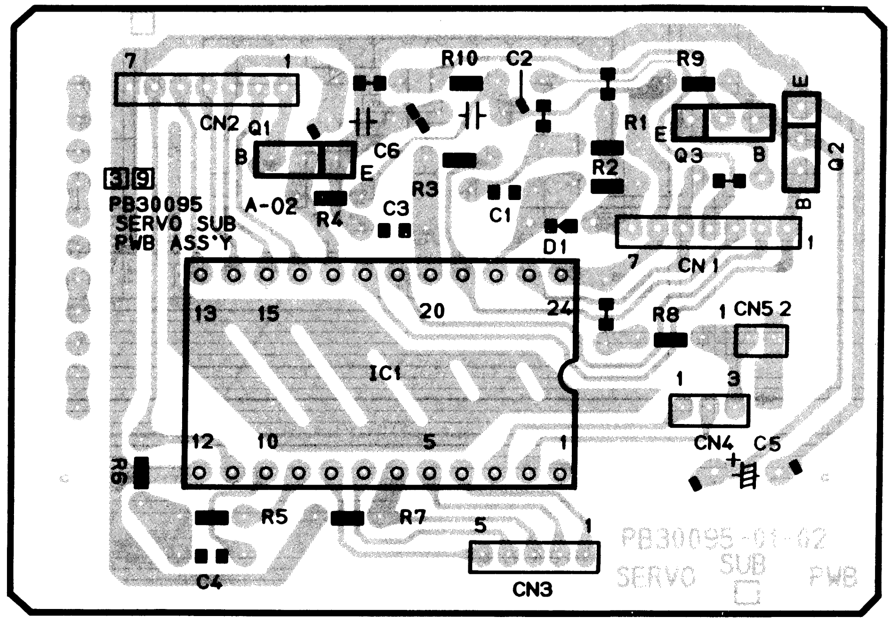

12 A/CTL HEAD
CN2
CTL HEAD
PB 2.5 Vp-p
SWD 5V
TP GND
TP1 CTL P
Q7 DTA124ES
Q6 DTC144ES
Q1 DTC124ES
D1
D2
D3
D4
CTL PB ON
POWER ON RESET
Vcc
REC:ON
PB:ON
Vcc/2
CN3
A FF
A BIAS
To 09 AUDIO, CN14
CN4
CTL ERASE
D FF
INDEX
VP ON
CTL CLOCK
SERVO
CAP FG
CAP DRIVE
SRL DATA
CAP FG(−)
SRL CLOCK
CAP FG(+)
CTL PULSE
START/STOP
From/To 04 MECHACON, CN4
5.8 Vp-p
0.5 Vp-p
1.5 Vp-p
5 Vp-p
0.8 Vp-p
2.8 V DC
CAP F-V
CAP APC DET
DRUM APC DET
DRUM F-V
CAP REF
DRUM REF
REC CTL GEN INDEX DET
NTSC/PAL/SECAM
SERIAL DECODER
CAP FG CD
PB CTL CD
SYNC SEP
TK SEL
REF SEL A
REF SEL B
CLK
DRUM FF & V PULSE GEN
DRUM SEL B
DRUM SEL A
DRUM PG/FG
SW MM
VP MM
VP SEL
REC CTL DELAY MM
GND
TK MM
SP
LP
X2
SW1
SW2
SW3
SW4
SW5
V.JITTER COMP
TRACKING COUNTER
CLOCK
IC1 HD49722NT
Q2,Q3,Q4,Q5 DTA124ES
R32 SP SW POINT
R36 LP 2 x NOR TK
R38 SP 2 x NOR TK
4.6 Vp-p
PB 5 Vp-p
2.5 Vp-p
5 Vp-p
0.8 Vp-p
CN6
D FF
YNR PLUSE
SYNC
GND
3 x fsc
GND
V PULSE
LP ADJ
From/To 05 VIDEO, CN5
39 SERVO SUB
IC1 BU3791
CN8
CN1
X2
SLOW/STILL
D FF
REEL DRIVE
SP
SWD 5V
GND
Vcc (5V)
SP
REEL DRIVE
DRUM FF
DELAIED DRUM FF
SLOW/STILL
X2
AUTO/MAN/SLOW
HEAD SELECT
SLOW PULSE
V PULSE ON
V PULSE ON
SPCL PB
BEST SEARCH
HEAD SEL
0.5H JUMP
0.25H JUMP
0.5H AUTO JUMP
EP (S/S+X2)
1H COLOR JUMP
OSC 1
OSC 2
OSC 3
GND
Q2 DTC124ES
Q3 DTC144WS
Q1 DTC144ES
CN5
SPECIAL TRICK
NC
From 04 MECHACON, CN19
CN4
SPECIAL TRICK
BEST SEARCH
HEAD SEL
To 43 PRE/REC AMP CN7
CN3
0.5H JUMP
0.25H JUMP
0.5H AUTO JUMF
COLOR AUTO JUMP
1H COLOR JUMP
To 05 VIDEO, CN12
LP STILL 5 Vp-p
LP STILL 5 Vp-p
CN7
CN2
A/M/S SEL
HEAD SEL
SLOW PULSE
VP ON
VP ON
SLOW CLOCK
GND
D
E
F
G
I
J
K
L

3.17 SERVO AND SERVO SUB CIRCUIT BOARDS

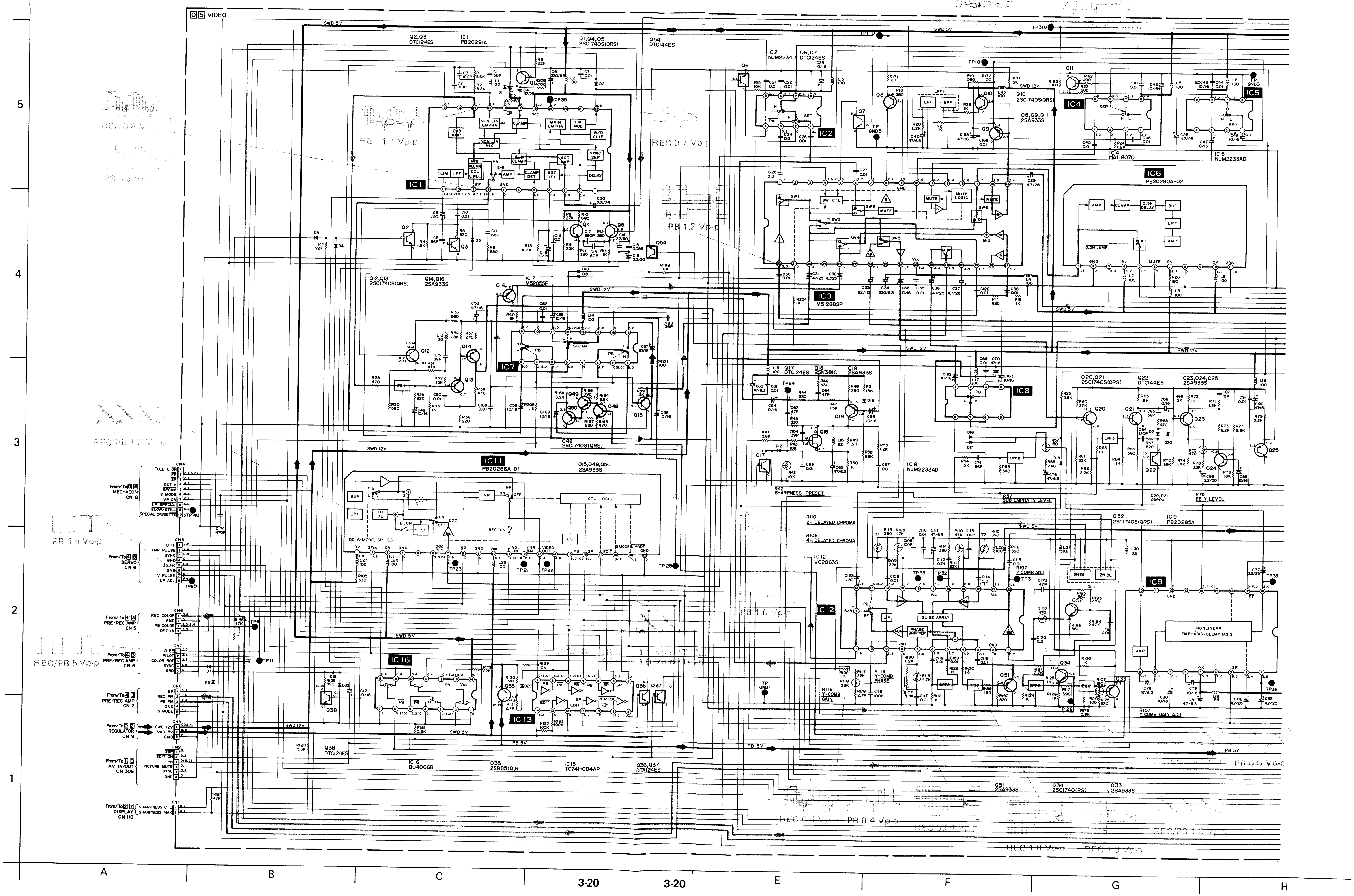
– SERVO –

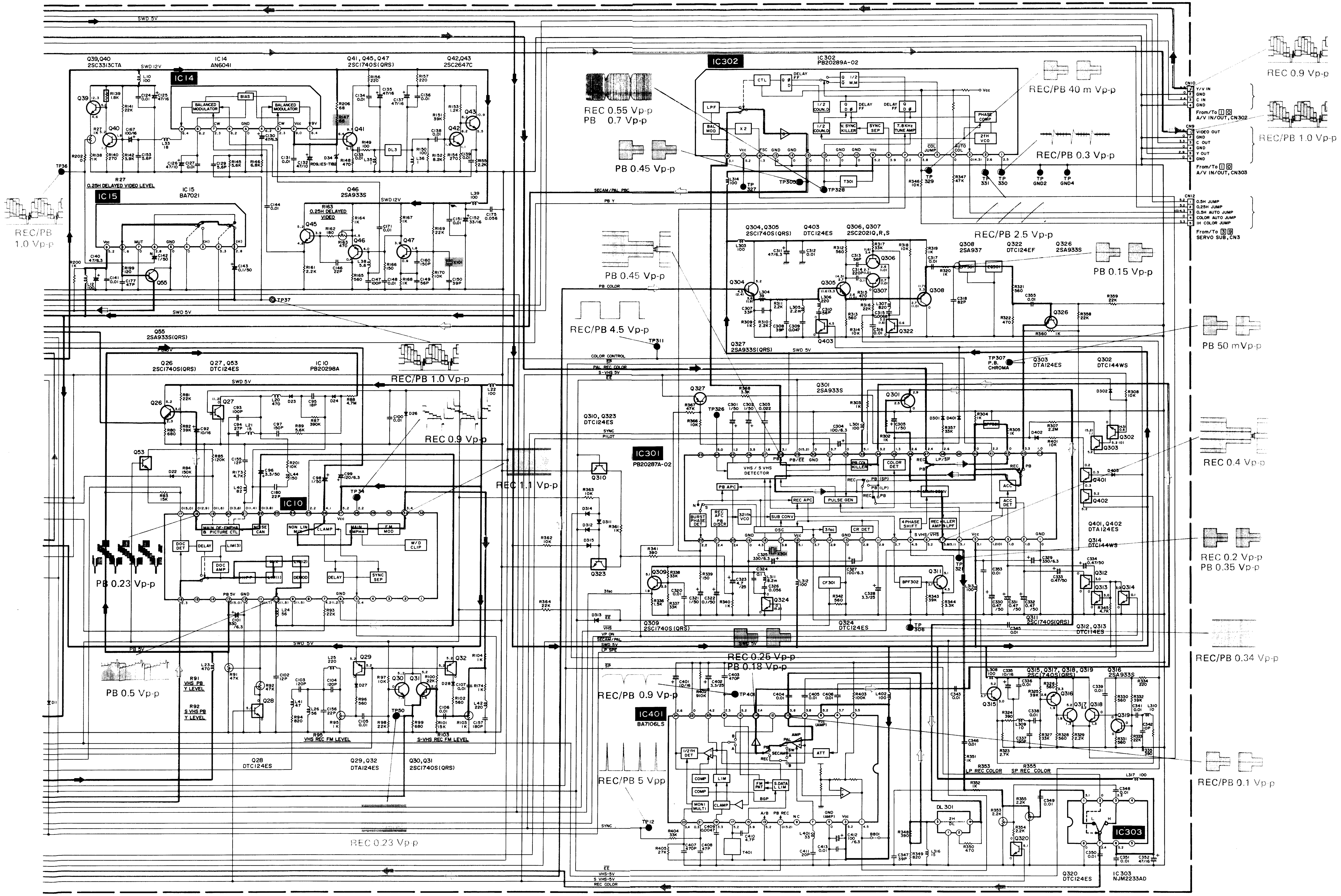

R32
SW POINT
R36
LPx2 NOR TK
R38
SPx2 NOR TK
R55
SP SLOW
TK PRE-SET
R59
LP SLOW
TK PRE-SET
SP SLOW
LP SLOW
SW POINT
LP X2
SP X2
CTL P
GND TP
D.FF
TP11
PB10152A-01
SERVO PWB ASS'Y
SERVO PWB
PB10152-01-01
IC1
IC2
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
Q1
Q2
Q3
Q4
Q5
Q6
Q7

– SERVO SUB –

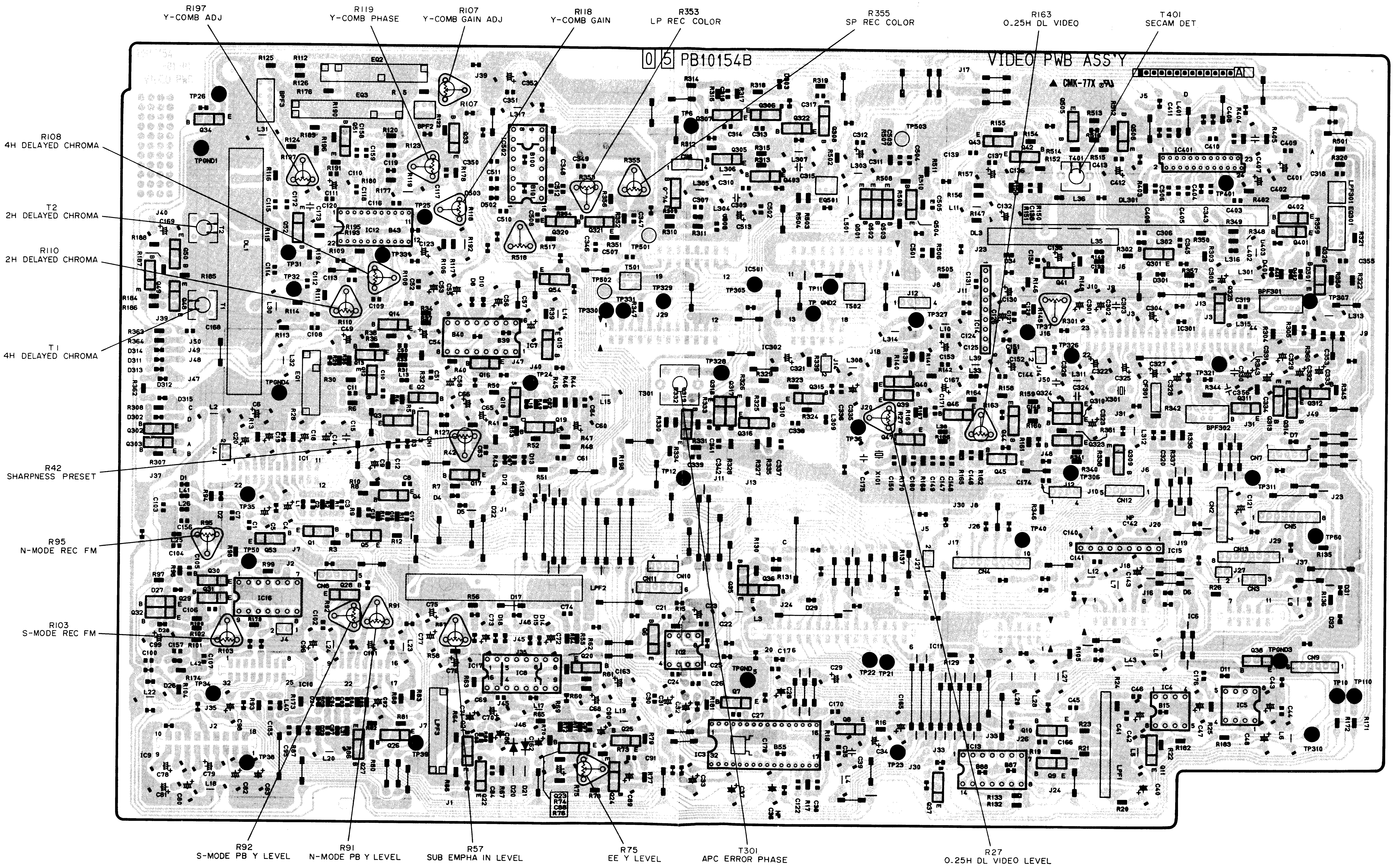

PB30095
SERVO SUB
PWB ASS'Y
A-02
PB30095-01-02
SERVO SUB PWB
IC1
CN1
CN2
CN3
CN4
CN5
Q1
Q2
Q3
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
C1
C2
C3
C4
C5
C6
D1

3.18 VIDEO SCHEMATIC DIAGRAM


05 VIDEO
SWD 5V
SWD 12V
PB 5V
Q2,Q3 DTC124ES
IC1 PB20291A
Q1,Q4,Q5 2SC1740S(QRS)
Q54 DTC144ES
IC2 NJM2234D
Q6,Q7 DTC124ES
Q8,Q9,Q11 2SA933S
Q10 2SC1740S(QRS)
IC4 HA118070
IC5 NJM2233AD
IC6 PB20290A-02
IC3 M51288SP
Q12,Q13 2SC1740S(QRS)
Q14,Q16 2SA933S
IC7 M52055P
Q15,Q17 DTC124ES
Q18 2SK381C
Q19 2SA933S
IC8 NJM2233AD
Q20,Q21 2SC1740S(QRS)
Q22 DTC144ES
Q23,Q24,Q25 2SA933S
IC11 PB20286A-01
Q15,Q49,Q50 2SA933S
Q48 2SC1740S(QRS)
IC12 VC2063S
Q52 2SC1740S(QRS)
IC9 PB20285A
IC16 BU4066B
Q35 2SB851Q,R
IC13 TC74HC04AP
Q36,Q37 DTA124ES
Q38 DTC124ES
Q51 2SA933S
Q34 2SC1740(RS)
Q33 2SA933S
R42 SHARPNESS PRESET
R57 SUB EMPHA IN LEVEL
R75 EE Y LEVEL
R110 2H DELAYED CHROMA
R108 4H DELAYED CHROMA
R197 Y COMB ADJ
R118 Y-COMB GAIN
R119 Y-COMB PHASE
R107 Y COMB GAIN ADJ
NONLINEAR EMPHASIS/DEEMPHASIS
CTL LOGIC
From/To 04 MECHACON CN 6
From/To 08 SERVO CN 6
From/To 03 PRE/REC AMP CN 5
From/To 03 PRE/REC AMP CN 6
From/To 03 PRE/REC AMP CN 2
From/To 02 REGULATOR CN 9
From/To 10 AV IN/OUT CN 306
From/To 07 DISPLAY CN 110
REC 0.8 Vp-p
REC 1.1 Vp-p
PB 0.9 Vp-p
REC 0.7 Vp-p
PB 1.2 Vp-p
REC/PB 1.2 Vp-p
PB 1.5 Vp-p
REC/PB 5 Vp-p
PB 1.0 Vp-p
A
B
C
D
E
F
G
H
1
2
3
4
5
6

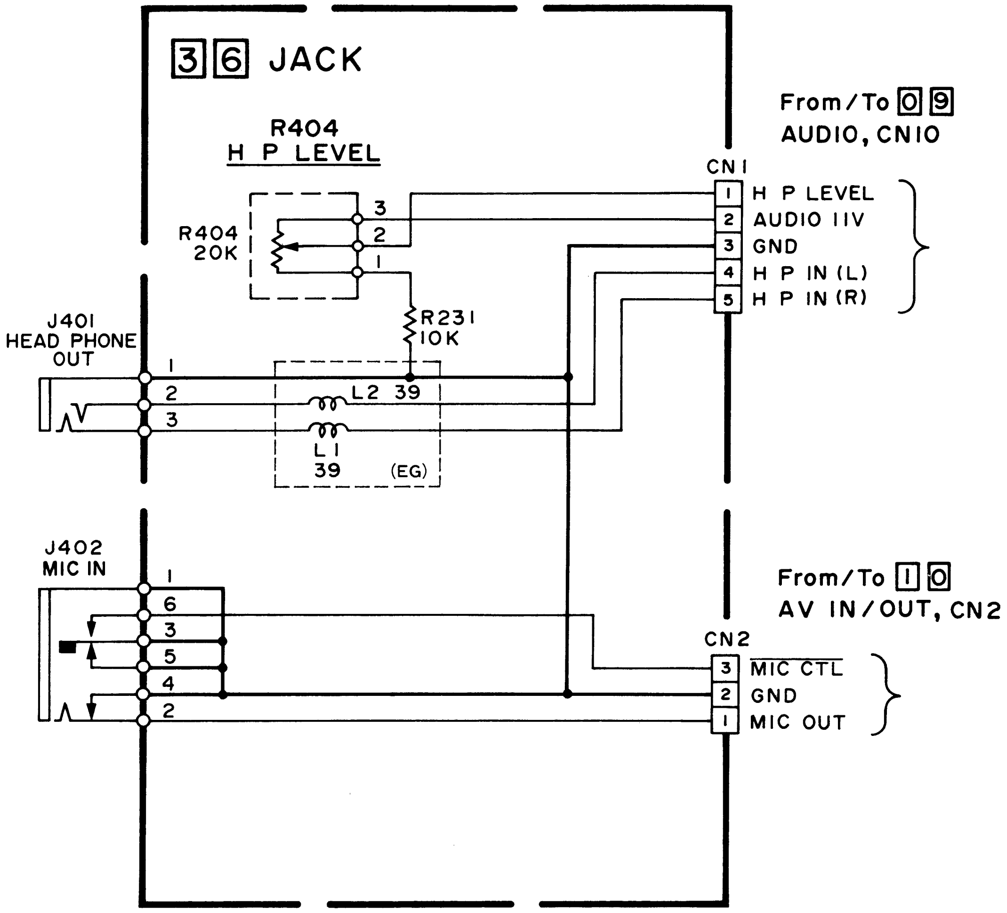

IC14
AN6041
Q39,Q40
2SC3313CTA
Q41,Q45,Q47
2SC1740S(QRS)
Q42,Q43
2SC2647C
BALANCED MODULATOR
BIAS
DL3
0.25H DELAYED VIDEO LEVEL
IC15
BA7021
Q46
2SA933S
0.25H DELAYED VIDEO
TP36
REC/PB 1.0 Vp-p
TP37
Q55
2SA933S(QRS)
Q26
2SC1740S(QRS)
Q27,Q53
DTC124ES
IC10
PB20298A
REC/PB 1.0 Vp-p
REC 0.9 Vp-p
REC 1.1 Vp-p
TP34
MAIN DE-EMPHA & PICTURE CTL
NOISE CAN
NON LIN MIX
CLAMP
MAIN EMPHA
FM MOD
DOC DET
DELAY
LIM(3)
DOC AMP
W/D CLIP
DEMOD
SYNC SEP
PB 0.23 Vp-p
PB 0.5 Vp-p
R91 VHS PB Y LEVEL
R92 S VHS PB Y LEVEL
R95 VHS REC FM LEVEL
R103 S-VHS REC FM LEVEL
Q28
DTC124ES
Q29,Q32
DTA124ES
Q30,Q31
2SC1740S(QRS)
TP50
REC 0.23 Vp-p
SWD 5V
SWD 12V
REC 0.55 Vp-p
PB 0.7 Vp-p
PB 0.45 Vp-p
IC302
PB20289A-02
LPF
BAL MOD
X2
CTL
1/2 COUN.D
V.SYNC KILLER
SYNC SEP
7.8KHz TUNE AMP
PHASE COMP
2TH VCO
TP305
TP327
TP328
T301
TP329
TP331
TP330
TP GND2
TP GND4
REC/PB 40 m Vp-p
REC/PB 0.3 Vp-p
REC/PB 2.5 Vp-p
REC 0.9 Vp-p
REC/PB 1.0 Vp-p
CN10
Y/V IN
GND
C IN
From/To A/V IN/OUT,CN302
CN9
VIDEO OUT
C OUT
Y OUT
From/To A/V IN/OUT,CN303
CN12
0.5H JUMP
0.25H JUMP
0.5H AUTO JUMP
COLOR AUTO JUMP
1H COLOR JUMP
From/To SERVO SUB,CN3
Q304,Q305
2SC1740S(QRS)
Q403
DTC124ES
Q306,Q307
2SC2021Q,R,S
Q308
2SA937
Q322
DTC124EF
Q326
2SA933S
PB 0.15 Vp-p
PB 0.45 Vp-p
Q327
2SA933S(QRS)
REC/PB 4.5 Vp-p
TP311
PB 50 mVp-p
TP307 P.B. CHROMA
Q303
DTA124ES
Q302
DTC144WS
Q301
2SA933S
Q310,Q323
DTC124ES
IC301
PB20287A-02
VHS / S VHS DETECTOR
PB APC
REC APC
PULSE GEN
MAIN CONV
ACC
ACC DET
BURST PHASE DET
REC AFC
PB DISCR
SUB CONV
OSC
CR DET
4 PHASE SHIFT
COLOR DET
REC 0.4 Vp-p
Q401,Q402
DTA124ES
Q314
DTC144WS
REC 0.2 Vp-p
PB 0.35 Vp-p
Q309
2SC1740S(QRS)
Q324
DTC124ES
Q311
2SC1740S(QRS)
Q312,Q313
DTC114ES
TP306
REC/PB 0.34 Vp-p
REC 0.25 Vp-p
PB 0.18 Vp-p
REC/PB 0.9 Vp-p
TP401
IC401
BA7106LS
1/2TH DET
COMP
LIM
MONI MULTI
CLAMP
FM PAT
S.DATA LIM
BGP
SECAM
ATT
AMP
REC/PB 5 Vpp
TP12
T401
DL301
Q315,Q317,Q318,Q319
2SC1740S(QRS)
Q316
2SA933S
R353 LP REC COLOR
R355 SP REC COLOR
REC/PB 0.1 Vp-p
IC303
NJM2233AD
Q320
DTC124ES
I
J
K
L
N
O
P

3.19 VIDEO CIRCUIT BOARD

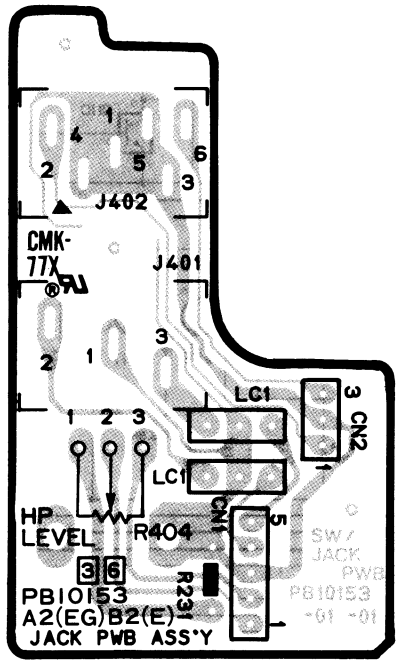

R197
Y-COMB ADJ
R119
Y-COMB PHASE
R107
Y-COMB GAIN ADJ
R118
Y-COMB GAIN
R353
LP REC COLOR
R355
SP REC COLOR
R163
0.25H DL VIDEO
T401
SECAM DET
R108
4H DELAYED CHROMA
T2
2H DELAYED CHROMA
R110
2H DELAYED CHROMA
T1
4H DELAYED CHROMA
R42
SHARPNESS PRESET
R95
N-MODE REC FM
R103
S-MODE REC FM
R92
S-MODE PB Y LEVEL
R91
N-MODE PB Y LEVEL
R57
SUB EMPHA IN LEVEL
R75
EE Y LEVEL
T301
APC ERROR PHASE
R27
0.25H DL VIDEO LEVEL
PB10154B
VIDEO PWB ASS'Y
CMK-77X

3.20 JACK SCHEMATIC DIAGRAM AND CIRCUIT BOARD

– SCHEMATIC DIAGRAM –

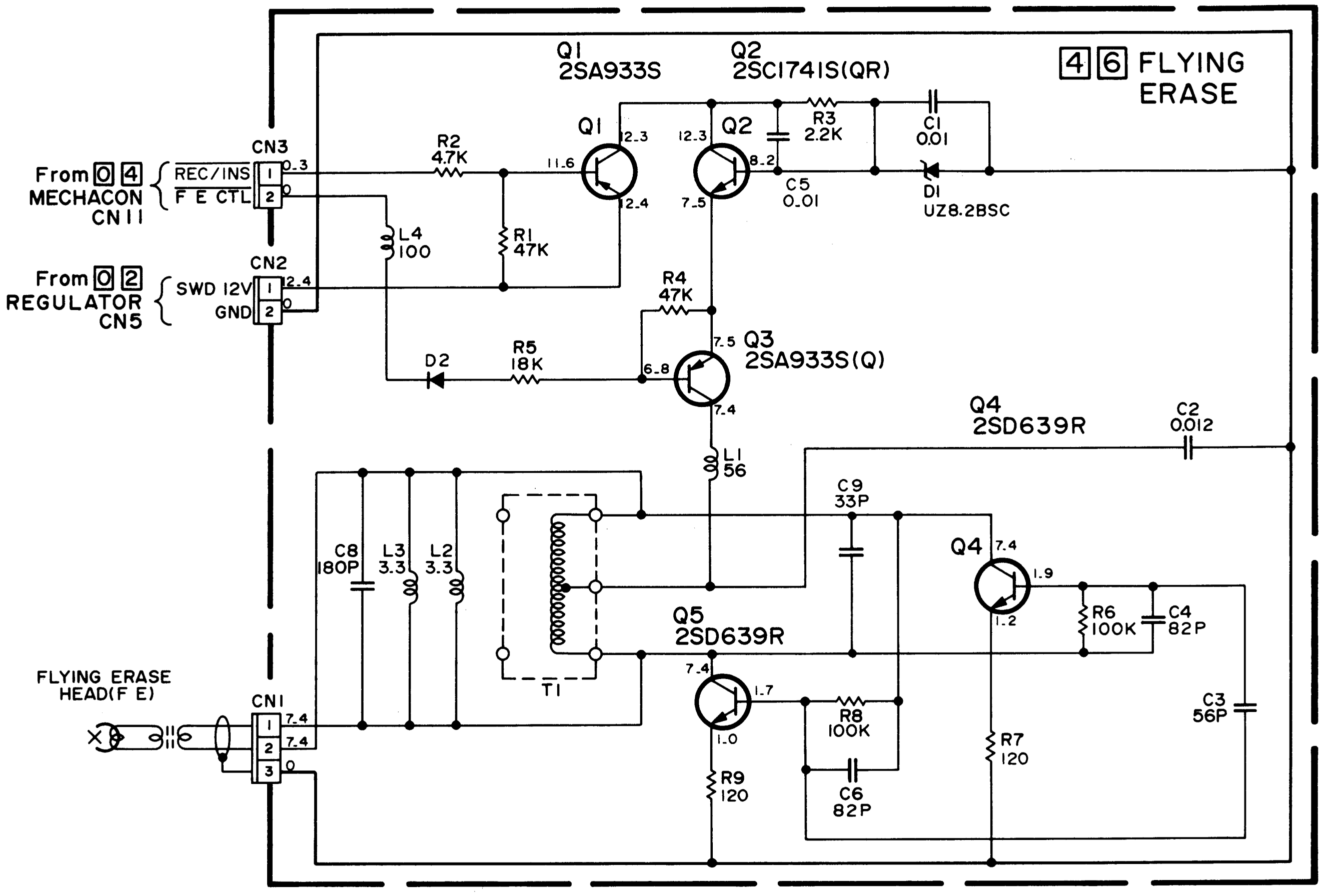

36 JACK
R404
H P LEVEL
R404
20K
R231
10K
J401
HEAD PHONE
OUT
L2 39
L1
39
(EG)
J402
MIC IN
From/To 09
AUDIO, CN10
CN1
1 H P LEVEL
2 AUDIO 11V
3 GND
4 H P IN (L)
5 H P IN (R)
From/To 10
AV IN/OUT, CN2
CN2
3 MIC CTL
2 GND
1 MIC OUT

– CIRCUIT BOARD –

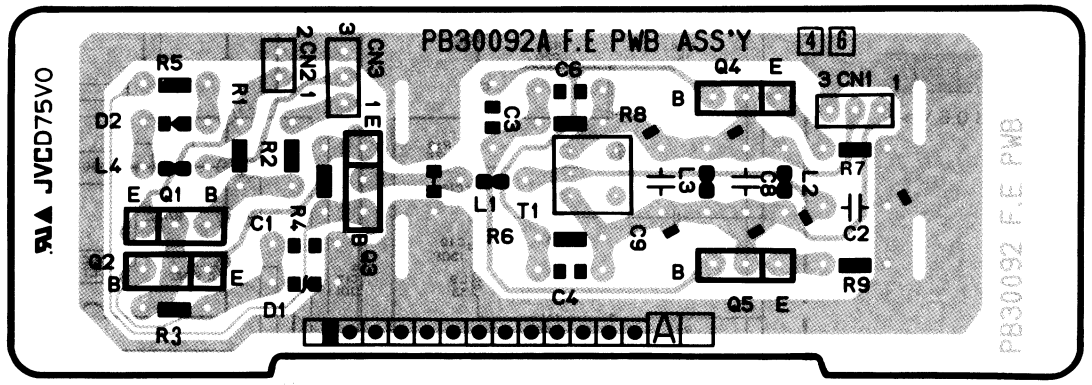

J402
J401
CMK-
77X
LC1
LC1
CN2
CN1
HP
LEVEL
R404
R231
36
PB10153
A2(EG) B2(E)
JACK PWB ASS'Y

3.21 FLYING ERASE SCHEMATIC DIAGRAM AND CIRCUIT BOARD

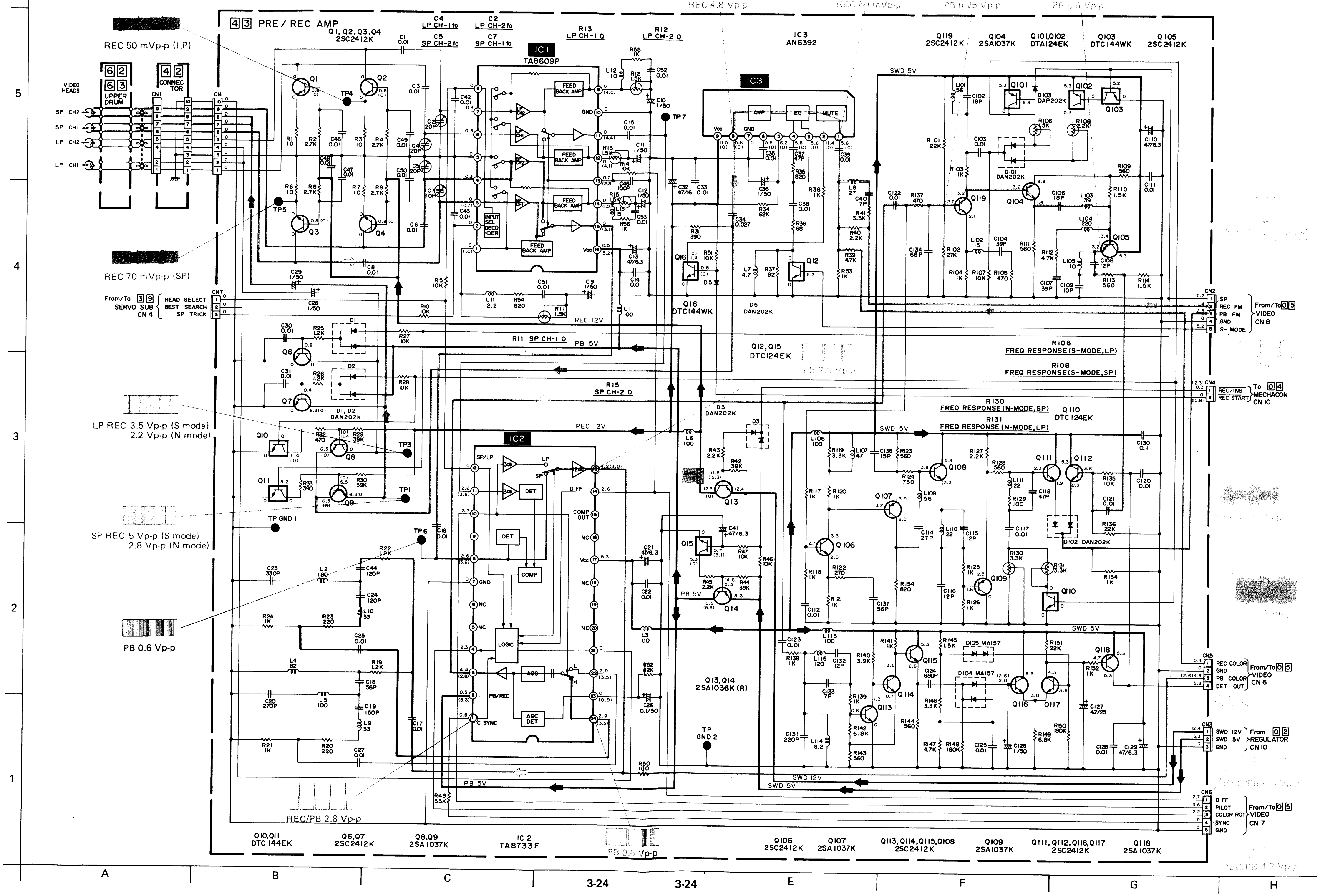
– SCHEMATIC DIAGRAM –


46 FLYING
ERASE
Q1
2SA933S
Q2
2SC1741S(QR)
From 04
MECHACON
CN11
CN3
REC/INS
F E CTL
From 02
REGULATOR
CN5
CN2
SWD 12V
GND
R2
4.7K
L4
100
R1
47K
R3
2.2K
C1
0.01
C5
0.01
D1
UZ8.2BSC
R4
47K
Q3
2SA933S(Q)
D2
R5
18K
Q4
2SD639R
C2
0.012
L1
56
C9
33P
C8
180P
L3
3.3
L2
3.3
T1
Q5
2SD639R
R6
100K
C4
82P
C3
56P
R8
100K
R7
120
R9
120
C6
82P
FLYING ERASE
HEAD(F E)
CN1

– CIRCUIT BOARD –

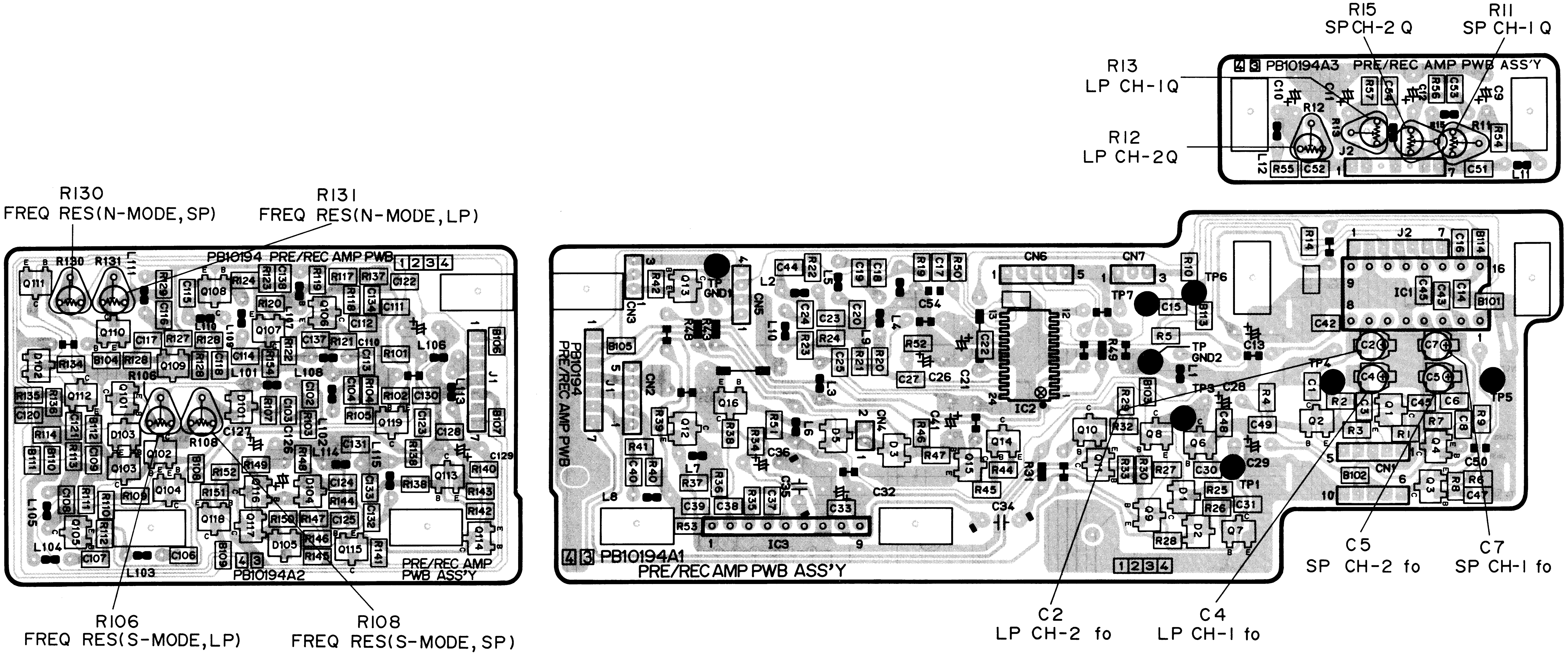

PB30092A F.E PWB ASS'Y 46
JVC D75V0
CN2
CN3
CN1
R5
D2
L4
Q1
Q2
R1
R2
R3
C1
R4
D1
Q3
C6
C3
R8
L1
T1
R6
C9
C4
L3
C8
L2
Q4
Q5
R7
C2
R9
PB30092 F.E PWB

3.22 PRE/REC AMP SCHEMATIC DIAGRAM

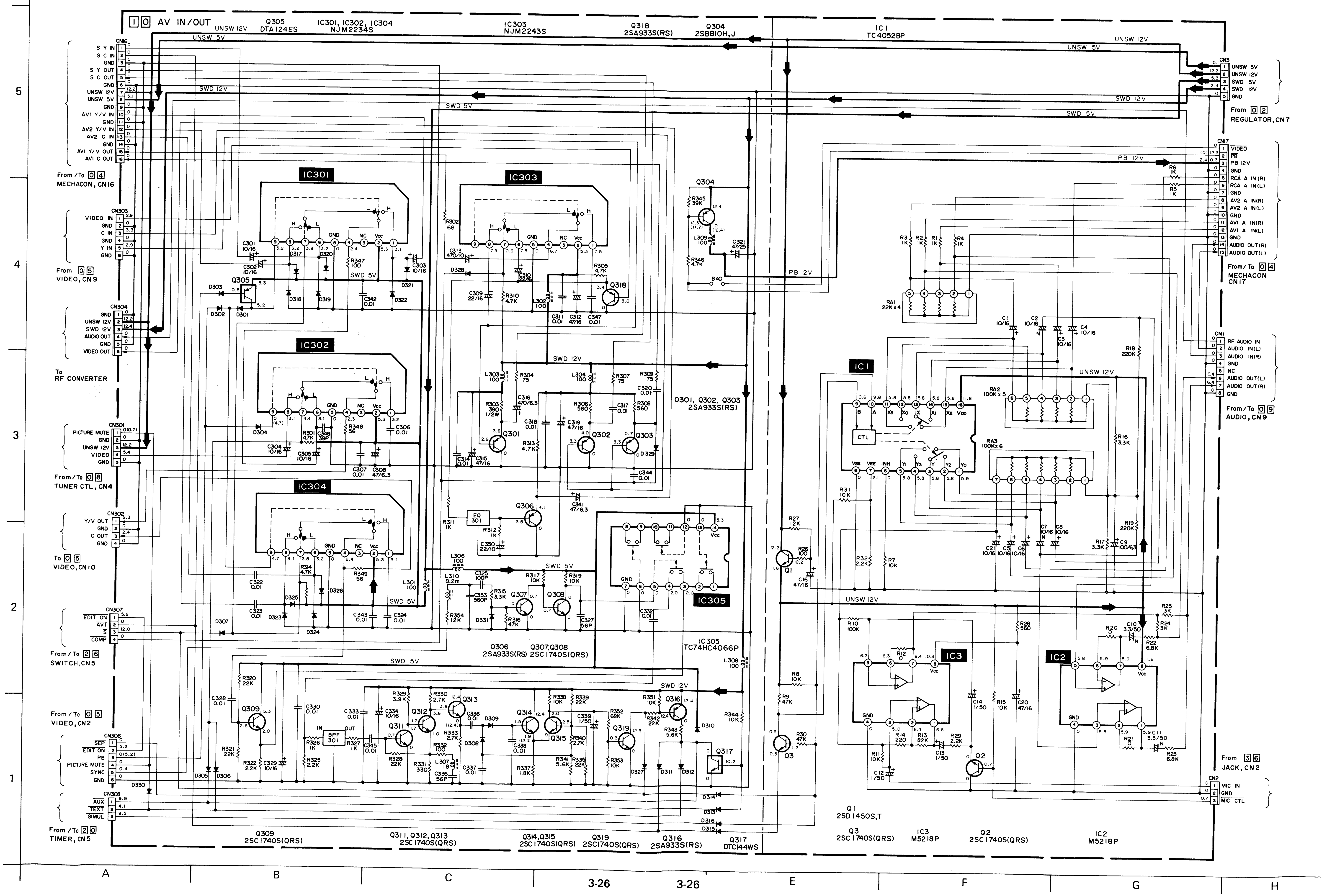


43 PRE / REC AMP
Q1, Q2, Q3, Q4 2SC2412K
IC1 TA8609P
IC2
IC3 AN6392
REC 50 mVp-p (LP)
REC 70 mVp-p (SP)
LP REC 3.5 Vp-p (S mode)
2.2 Vp-p (N mode)
SP REC 5 Vp-p (S mode)
2.8 Vp-p (N mode)
PB 0.6 Vp-p
REC/PB 2.8 Vp-p
REC 4.8 Vp-p
REC 60 mVp-p
PB 0.25 Vp-p
PB 0.6 Vp-p
PB 2.8 Vp-p
REC/PB 4.2 Vp-p
VIDEO HEADS
SP CH2
SP CH1
LP CH2
LP CH1
62
63
UPPER DRUM
42
CONNECTOR
CN1
From/To 39 SERVO SUB CN 4
HEAD SELECT
BEST SEARCH
SP TRICK
CN7
C4 LP CH-1 fo
C5 SP CH-2 fo
C2 LP CH-2 fo
C7 SP CH-1 fo
R13 LP CH-1 Q
R12 LP CH-2 Q
R11 SP CH-1 Q
R15 SP CH-2 Q
FEED BACK AMP
INPUT SEL DECODER
AMP
EQ
MUTE
LOGIC
AGC
AGC DET
DET
COMP
COMP OUT
D FF
C SYNC
PB/REC
REC 12V
PB 5V
SWD 5V
SWD 12V
TP1
TP3
TP4
TP5
TP6
TP7
TP GND 1
TP GND 2
R106 FREQ RESPONSE (S-MODE, LP)
R108 FREQ RESPONSE (S-MODE, SP)
R130 FREQ RESPONSE (N-MODE, SP)
R131 FREQ RESPONSE (N-MODE, LP)
Q119 2SC2412K
Q104 2SA1037K
Q101, Q102 DTA124EK
Q103 DTC144WK
Q105 2SC2412K
Q16 DTC144WK
D5 DAN202K
Q12, Q15 DTC124EK
D1, D2 DAN202K
D3 DAN202K
D101 DAN202K
D102 DAN202K
D103 DAP202K
D104 MA157
D105 MA157
Q110 DTC124EK
Q13, Q14 2SA1036K (R)
CN2
SP
REC FM
PB FM
GND
S- MODE
From/To 05 VIDEO CN 8
CN4
REC/INS
REC START
To 04 MECHACON CN 10
CN5
REC COLOR
GND
PB COLOR
DET OUT
From/To 05 VIDEO CN 6
CN3
SWD 12V
SWD 5V
GND
From 02 REGULATOR CN 10
CN6
D FF
PILOT
COLOR ROT
SYNC
GND
From/To 05 VIDEO CN 7
Q10, Q11 DTC 144EK
Q6, Q7 2SC2412K
Q8, Q9 2SA1037K
IC 2 TA8733F
Q106 2SC2412K
Q107 2SA 1037K
Q113, Q114, Q115, Q108 2SC2412K
Q109 2SA1037K
Q111, Q112, Q116, Q117 2SC2412K
Q118 2SA 1037K
A
B
C
D
E
F
G
H
1
2
3
4
5
6

3.23 PRE/REC AMP CIRCUIT BOARD

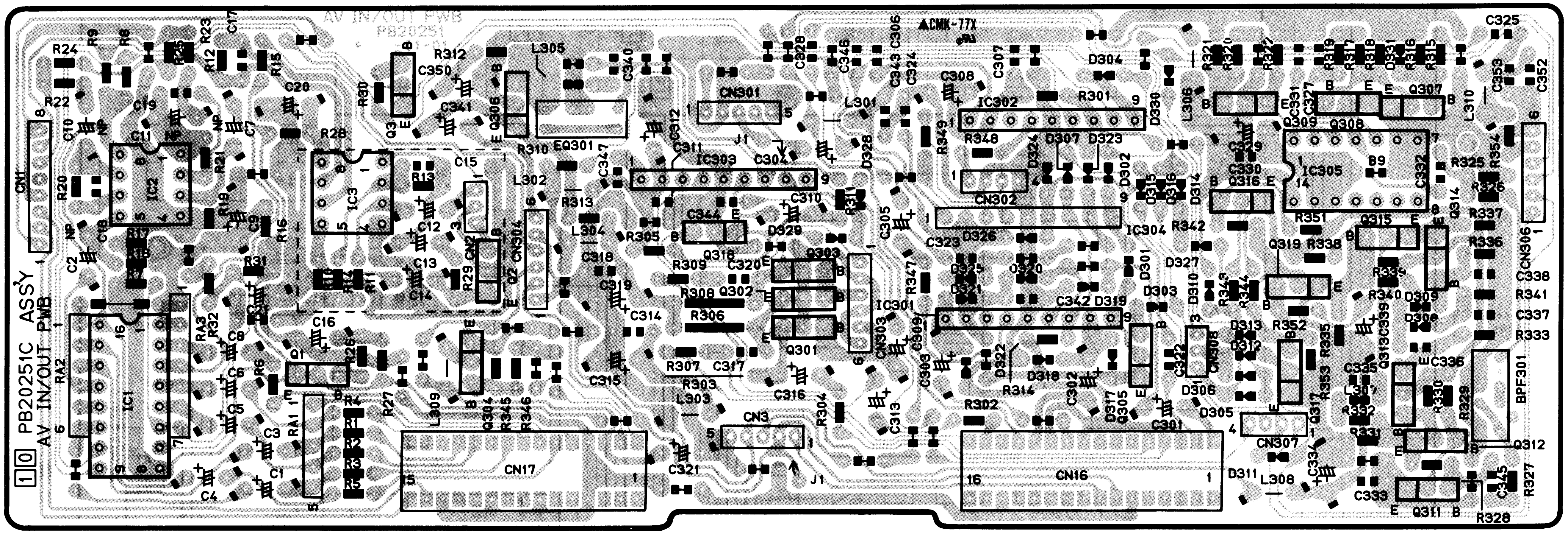

R130
FREQ RES(N-MODE, SP)
R131
FREQ RES(N-MODE, LP)
PB10194 PRE/REC AMP PWB
PB10194A2
PRE/REC AMP PWB ASS'Y
R106
FREQ RES(S-MODE, LP)
R108
FREQ RES(S-MODE, SP)
PB10194A1
PRE/REC AMP PWB ASS'Y
PB10194 PRE/REC AMP PWB
C2
LP CH-2 fo
C4
LP CH-1 fo
C5
SP CH-2 fo
C7
SP CH-1 fo
R13
LP CH-1Q
R12
LP CH-2Q
R15
SP CH-2 Q
R11
SP CH-1 Q
PB10194A3 PRE/REC AMP PWB ASS'Y
TP GND1
TP GND2
TP1
TP3
TP4
TP5
TP6
TP7
IC1
IC2
IC3
J1
J2
CN1
CN2
CN3
CN4
CN5
CN6
CN7

3.24 AV IN/OUT SCHEMATIC DIAGRAM



6
5
4
3
2
1
A
B
C
E
F
G
H
10 AV IN/OUT
UNSW 12V
UNSW 5V
SWD 12V
SWD 5V
PB 12V
Q305 DTA124ES
IC301, IC302, IC304 NJM2234S
IC303 NJM2243S
Q318 2SA933S(RS)
Q304 2SB810H,J
IC1 TC4052BP
CN16
S Y IN
S C IN
GND
S Y OUT
S C OUT
GND
UNSW 12V
UNSW 5V
GND
AV1 Y/V IN
GND
AV2 Y/V IN
AV2 C IN
GND
AV1 Y/V OUT
AV1 C OUT
From/To 04 MECHACON, CN16
CN303
VIDEO IN
GND
C IN
GND
Y IN
GND
From 05 VIDEO, CN9
CN304
GND
UNSW 12V
SWD 12V
AUDIO OUT
GND
VIDEO OUT
To RF CONVERTER
CN301
PICTURE MUTE
GND
UNSW 12V
VIDEO
GND
From/To 08 TUNER CTL, CN4
CN302
Y/V OUT
GND
C OUT
GND
To 05 VIDEO, CN10
CN307
EDIT ON
AV1
S
COMP
From/To 26 SWITCH, CN5
From/To 05 VIDEO, CN2
CN306
SEP
EDIT ON
PB
PICTURE MUTE
SYNC
GND
CN308
AUX
TEXT
SIMUL
From/To 20 TIMER, CN5
IC301
IC302
IC303
IC304
IC305
IC305 TC74HC4066P
GND
NC
Vcc
Q301
Q302
Q303
Q304
Q305
Q306
Q307
Q308
Q309
Q311
Q312
Q313
Q314
Q315
Q316
Q317
Q318
Q319
EQ 301
BPF 301
IN
OUT
Q301, Q302, Q303 2SA933S(RS)
Q306 2SA933S(RS)
Q307, Q308 2SC1740S(QRS)
Q309 2SC1740S(QRS)
Q311, Q312, Q313 2SC1740S(QRS)
Q314, Q315 2SC1740S(QRS)
Q319 2SC1740S(QRS)
Q316 2SA933S(RS)
Q317 DTC144WS
CN3
UNSW 5V
UNSW 12V
SWD 5V
SWD 12V
GND
From 02 REGULATOR, CN7
CN17
VIDEO
PB
PB 12V
GND
RCA A IN(R)
RCA A IN(L)
GND
AV2 A IN(R)
AV2 A IN(L)
GND
AV1 A IN(R)
AV1 A IN(L)
GND
AUDIO OUT(R)
AUDIO OUT(L)
From/To 04 MECHACON CN17
CN1
RF AUDIO IN
AUDIO IN(L)
AUDIO IN(R)
GND
NC
AUDIO OUT(L)
AUDIO OUT(R)
GND
From/To 09 AUDIO, CN9
IC1
CTL
VDD
VSS
VEE
INH
RA1 22K x 4
RA2 100K x 5
RA3 100K x 6
IC2
IC3
Q1
Q2
Q3
CN2
MIC IN
GND
MIC CTL
From 36 JACK, CN2
Q1 2SD1450S,T
Q3 2SC1740S(QRS)
IC3 M5218P
Q2 2SC1740S(QRS)
IC2 M5218P

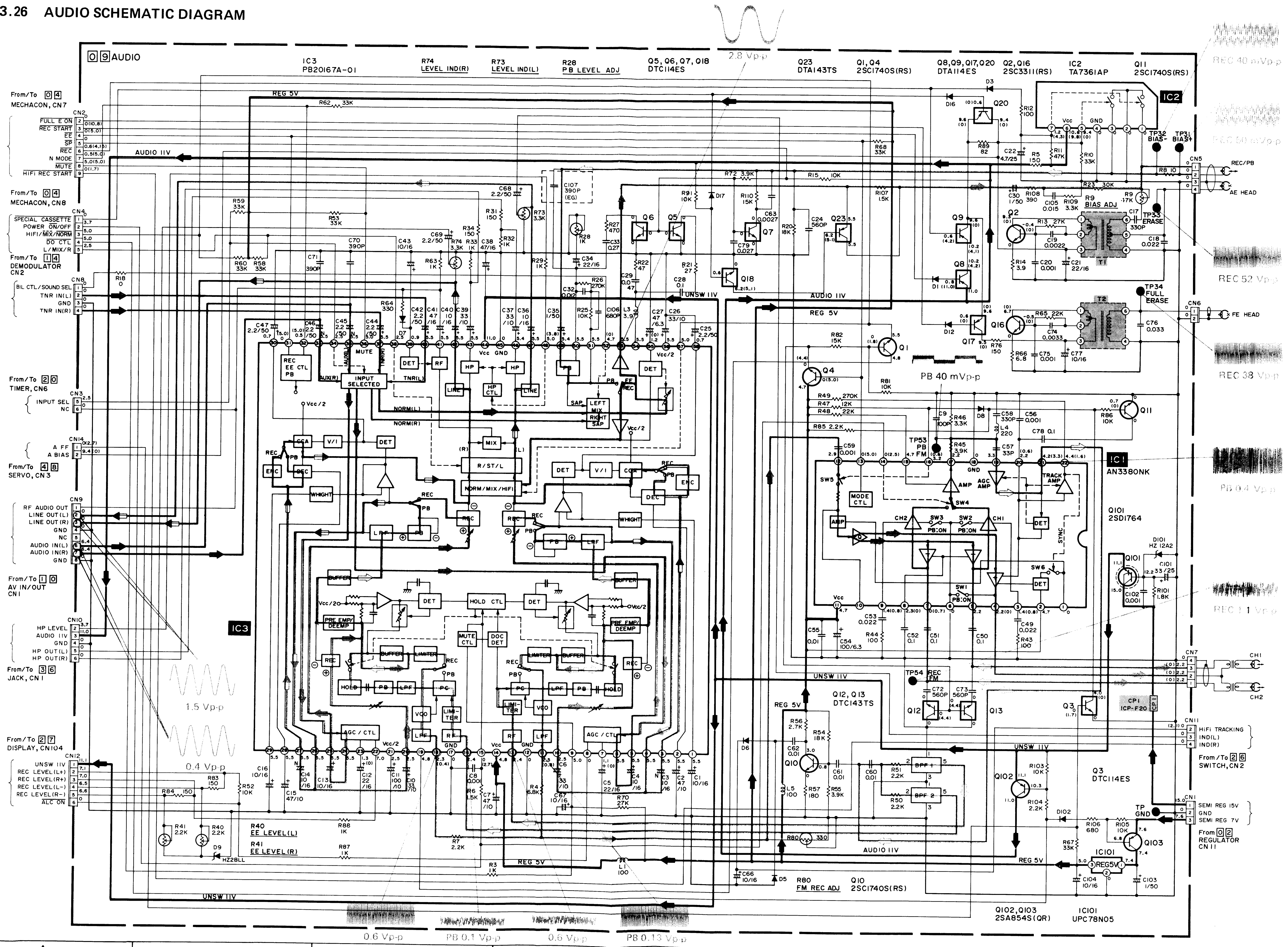
3.25 AV IN/OUT CIRCUIT BOARD



AV IN/OUT PWB
PB20251
▲CMK-77X
PB20251C ASSY
AV IN/OUT PWB
10
IC1
IC2
IC3
IC301
IC302
IC303
IC304
IC305
CN1
CN2
CN3
CN16
CN17
CN301
CN302
CN303
CN304
CN306
CN307
CN308
J1
EQ301
BPF301
RA1
RA2
RA3
Q1
Q2
Q3
Q301
Q302
Q303
Q304
Q305
Q306
Q307
Q308
Q309
Q311
Q312
Q313
Q314
Q315
Q316
Q317
Q318
Q319
Q320
L301
L302
L303
L304
L305
L306
L307
L308
L309
L310
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R301
R302
R303
R304
R305
R306
R307
R308
R309
R310
R311
R312
R313
R314
R315
R316
R317
R318
R319
R320
R321
R322
R325
R326
R327
R328
R329
R330
R331
R332
R333
R335
R336
R337
R338
R339
R340
R341
R342
R343
R344
R345
R346
R347
R348
R349
R351
R352
R353
R354
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C301
C302
C303
C304
C305
C306
C307
C308
C309
C310
C311
C312
C313
C314
C315
C316
C317
C318
C319
C320
C321
C323
C324
C325
C327
C328
C329
C330
C331
C332
C333
C334
C335
C336
C337
C338
C339
C340
C341
C342
C343
C344
C345
C346
C347
C350
C352
C353
D301
D302
D303
D304
D305
D306
D307
D308
D309
D310
D311
D312
D313
D314
D315
D316
D317
D318
D319
D320
D321
D322
D323
D324
D325
D326
D327
D328
D329
D330
D331
B9
NP
E
B

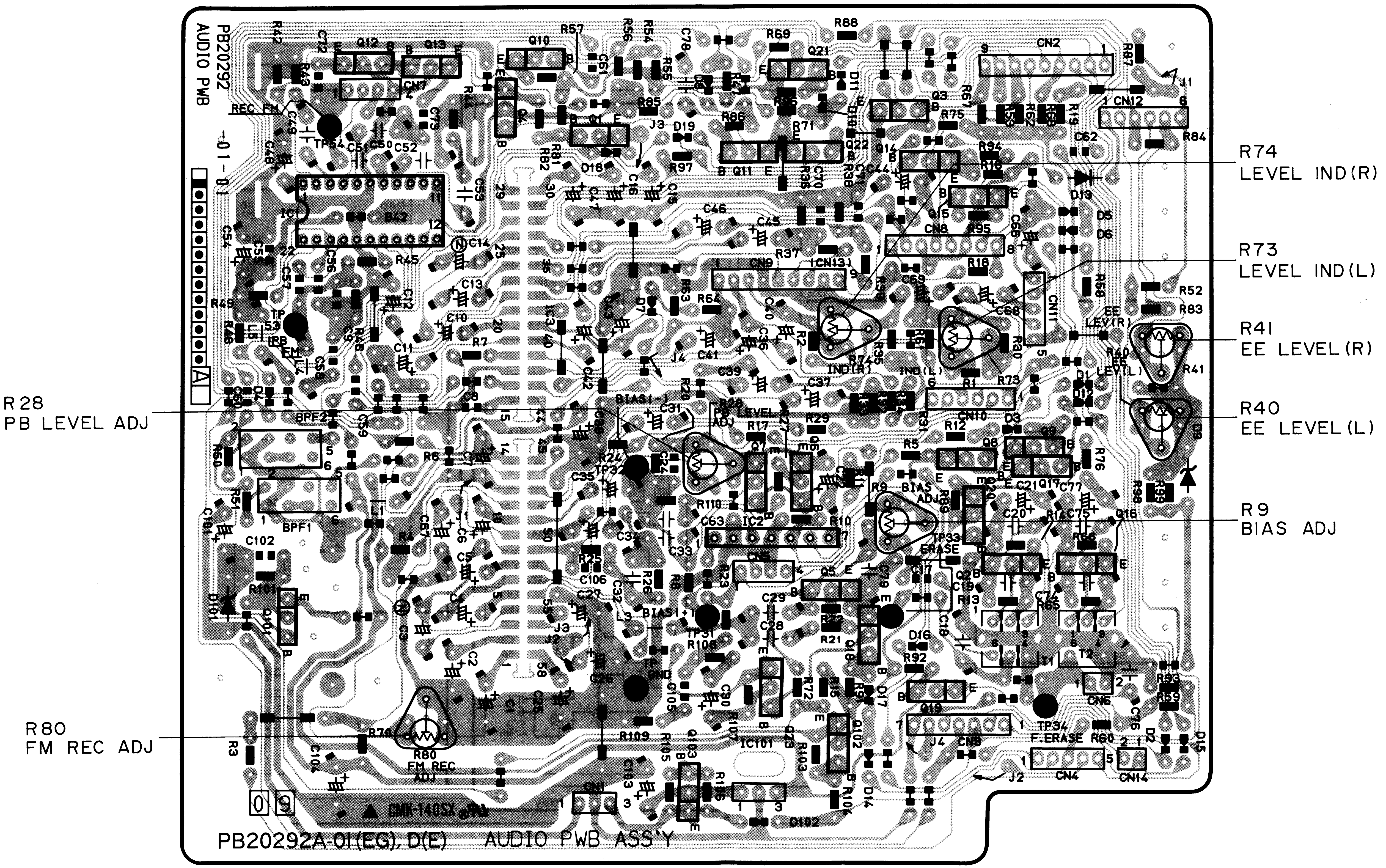
6
5
4
3
2
1
A
B
C
E
F
G
H

3.26 AUDIO SCHEMATIC DIAGRAM



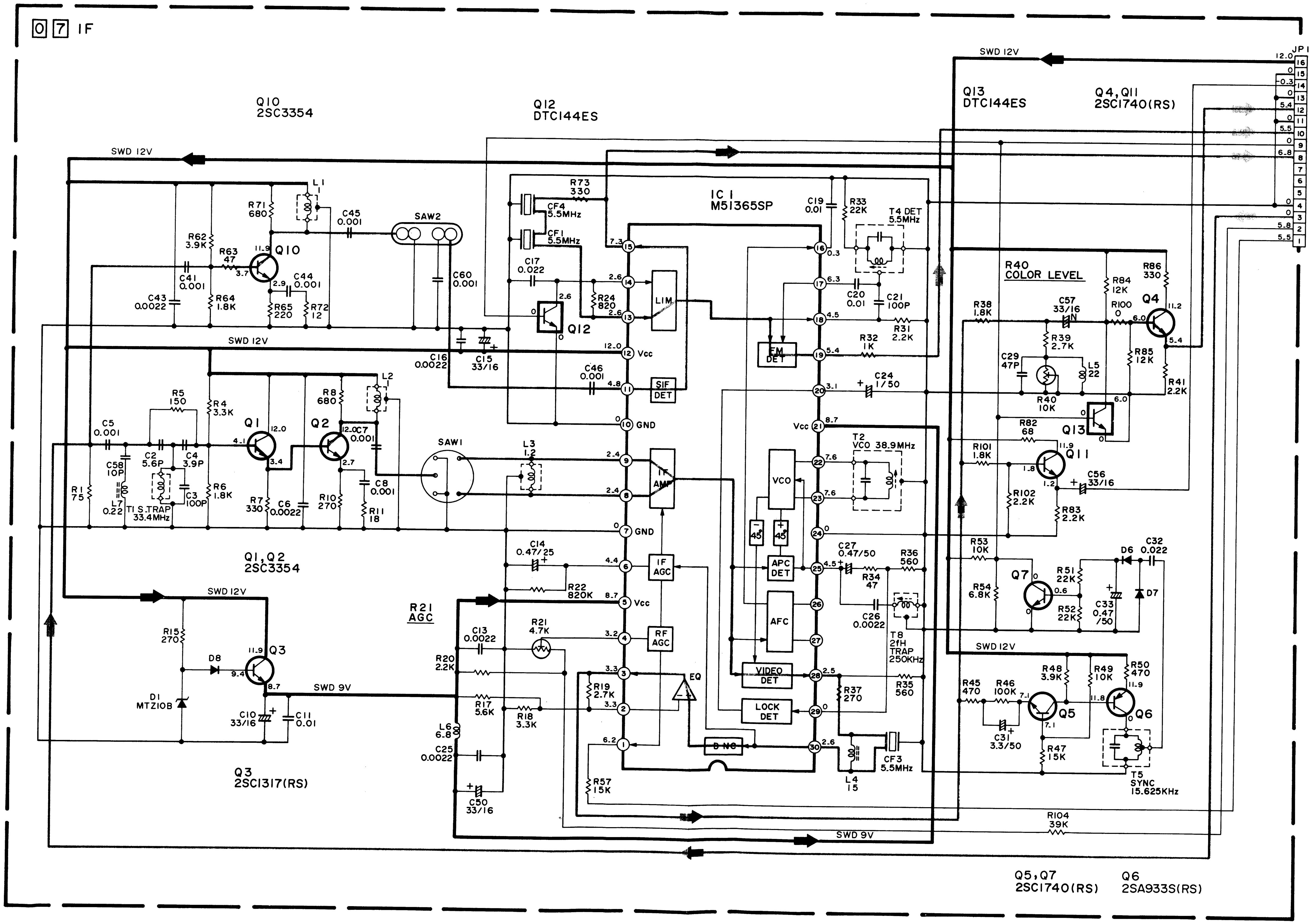
09 AUDIO
IC3 PB20167A-01
R74 LEVEL IND(R)
R73 LEVEL IND(L)
R28 PB LEVEL ADJ
Q5, Q6, Q7, Q18 DTC114ES
Q23 DTA143TS
Q1, Q4 2SC1740S(RS)
Q8, Q9, Q17, Q20 DTA114ES
Q2, Q16 2SC3311(RS)
IC2 TA7361AP
Q11 2SC1740S(RS)
2.8 Vp-p
REC 40 mVp-p
REC 50 mVp-p
REC 52 Vp-p
REC 38 Vp-p
PB 0.4 Vp-p
REC 1.1 Vp-p
PB 40 mVp-p
1.5 Vp-p
0.4 Vp-p
0.6 Vp-p
PB 0.1 Vp-p
0.5 Vp-p
PB 0.13 Vp-p
From/To 04 MECHACON, CN7
CN2
FULL E ON
REC START
EE
SP
REC
N MODE
MUTE
HiFi REC START
From/To 04 MECHACON, CN8
CN4
SPECIAL CASSETTE
POWER ON/OFF
HiFi/MIX/NORM
DO CTL
L/MIX/R
From/To 14 DEMODULATOR CN2
CN8
BIL CTL/SOUND SEL
TNR IN(L)
GND
TNR IN(R)
From/To 20 TIMER, CN6
CN3
INPUT SEL
NC
CN14
A FF
A BIAS
From/To 48 SERVO, CN3
CN9
RF AUDIO OUT
LINE OUT(L)
LINE OUT(R)
GND
NC
AUDIO IN(L)
AUDIO IN(R)
GND
From/To 10 AV IN/OUT CN1
CN10
HP LEVEL
AUDIO 11V
GND
HP OUT(L)
HP OUT(R)
From/To 36 JACK, CN1
From/To 27 DISPLAY, CN104
CN12
UNSW 11V
REC LEVEL(L+)
REC LEVEL(R+)
REC LEVEL(L-)
REC LEVEL(R-)
ALC ON
REG 5V
AUDIO 11V
UNSW 11V
IC3
INPUT SELECTED
MUTE
NORM(L)
NORM(R)
R/ST/L
NORM/MIX/HIFI
LEFT MIX RIGHT SAP
ENC
DEC
CCA
V/I
DET
WHIGHT
LPF
PB
REC
HP
HP CTL
LINE
BUFFER
LIMITER
PRE EMP/DEEMP
HOLD CTL
MUTE CTL
DOC DET
HOLD
PC
VCO
LIMITER
AGC/CTL
RF
Vcc/2
R40 EE LEVEL(L)
R41 EE LEVEL(R)
D9 HZ28LL
IC2
TP32 BIAS-
TP31 BIAS+
CN5
REC/PB
AE HEAD
R9 BIAS ADJ
TP33 ERASE
T1
T2
TP34 FULL ERASE
CN6
FE HEAD
IC1 AN3380NK
TP53 PB FM
SW5
MODE CTL
AMP
AGC AMP
TRACK AMP
SW4
CH2
SW3 PB:ON
SW2 PB:ON
CH1
SYNC
SW6
SW1 PB:ON
Q101 2SD1764
D101 HZ12A2
CN7
CH1
CH2
TP54 REC FM
Q12, Q13 DTC143TS
CP1 ICP-F20
CN11
HiFi TRACKING
IND(L)
IND(R)
From/To 26 SWITCH, CN2
BPF 1
BPF 2
Q3 DTC114ES
CN1
SEMI REG 15V
GND
SEMI REG 7V
From 02 REGULATOR CN11
TP GND
IC101 REG5V
R80 FM REC ADJ
Q10 2SC1740S(RS)
Q102, Q103 2SA854S(QR)
IC101 UPC78N05

3.27 AUDIO CIRCUIT BOARD


R74
LEVEL IND(R)
R73
LEVEL IND(L)
R41
EE LEVEL(R)
R40
EE LEVEL(L)
R9
BIAS ADJ
R28
PB LEVEL ADJ
R80
FM REC ADJ
PB20292
AUDIO PWB
PB20292A-01(EG), D(E) AUDIO PWB ASS'Y
CMK-140SX

5
4
3
2
1
A
B
C
E
F
G
H

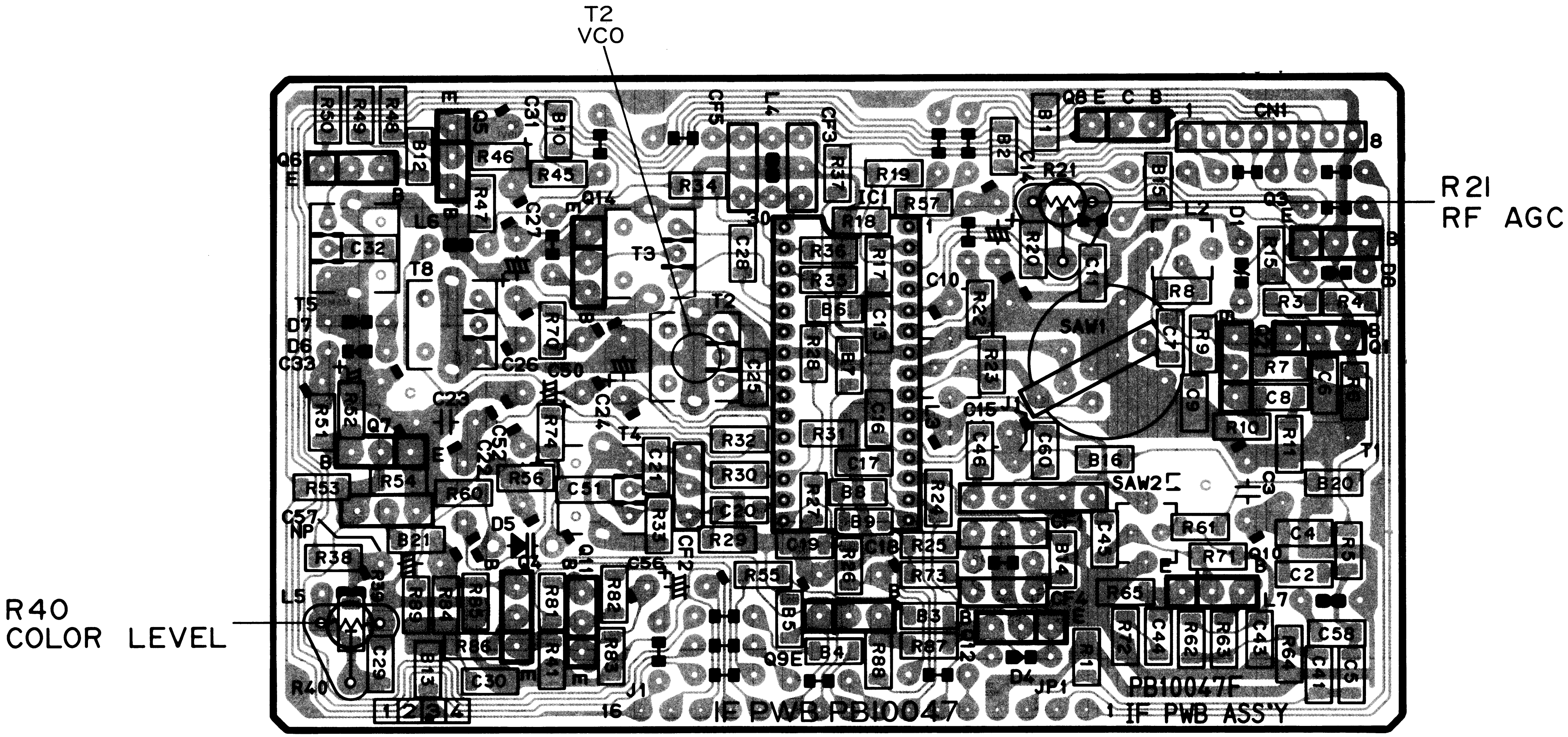
3.28 IF SCHEMATIC DIAGRAM



07 IF
Q10 2SC3354
Q12 DTC144ES
Q13 DTC144ES
Q4,Q11 2SC1740(RS)
Q1,Q2 2SC3354
Q3 2SC1317(RS)
Q5,Q7 2SC1740(RS)
Q6 2SA933S(RS)
IC1 M51365SP
SWD 12V
SWD 9V
SAW1
SAW2
L1
L2
L3 1.2
L4 15
L5 22
L6 6.8
L7 0.22
R1 75
R4 3.3K
R5 150
R6 1.8K
R7 330
R8 680
R10 270
R11 18
R15 270
R17 5.6K
R18 3.3K
R19 2.7K
R20 2.2K
R21 4.7K
R21 AGC
R22 820K
R24 820
R31 2.2K
R32 1K
R33 22K
R34 47
R35 560
R36 560
R37 270
R38 1.8K
R39 2.7K
R40 10K
R40 COLOR LEVEL
R41 2.2K
R45 470
R46 100K
R47 15K
R48 3.9K
R49 10K
R50 470
R51 22K
R52 22K
R53 10K
R54 6.8K
R57 15K
R62 3.9K
R63 47
R64 1.8K
R65 220
R71 680
R72 12
R73 330
R82 68
R83 2.2K
R84 12K
R85 12K
R86 330
R100 0
R101 1.8K
R102 2.2K
R104 39K
C2 5.6P
C3 100P
C4 3.9P
C5 0.001
C6 0.0022
C7 0.001
C8 0.001
C10 33/16
C11 0.01
C13 0.0022
C14 0.47/25
C15 33/16
C16 0.0022
C17 0.022
C19 0.01
C20 0.01
C21 100P
C24 1/50
C25 0.0022
C26 0.0022
C27 0.47/50
C29 47P
C31 3.3/50
C32 0.022
C33 0.47/50
C41 0.001
C43 0.0022
C44 0.001
C45 0.001
C46 0.001
C50 33/16
C56 33/16
C57 33/16
C58 10P
C60 0.001
CF1 5.5MHz
CF3 5.5MHz
CF4 5.5MHz
T1 S.TRAP 33.4MHz
T2 VCO 38.9MHz
T4 DET 5.5MHz
T5 SYNC 15.625KHz
T8 2fH TRAP 250KHz
D1 MTZ10B
D6
D7
D8
LIM
SIF DET
FM DET
IF AMP
IF AGC
RF AGC
EQ
VCO
APC DET
AFC
VIDEO DET
LOCK DET
B NC
-45°
+45°
Vcc
GND
JP1
16 SWD 12V
15 GND
14 VPS
13 GND
12 VIDEO
11 GND
10 AUDIO
9 SYNC DET
8 SIF
7 NC
6 MUTE
5 NC
4 GND
3 IF
2 AGC DET
1 AGC
From/To 08 TNR CTL JP1

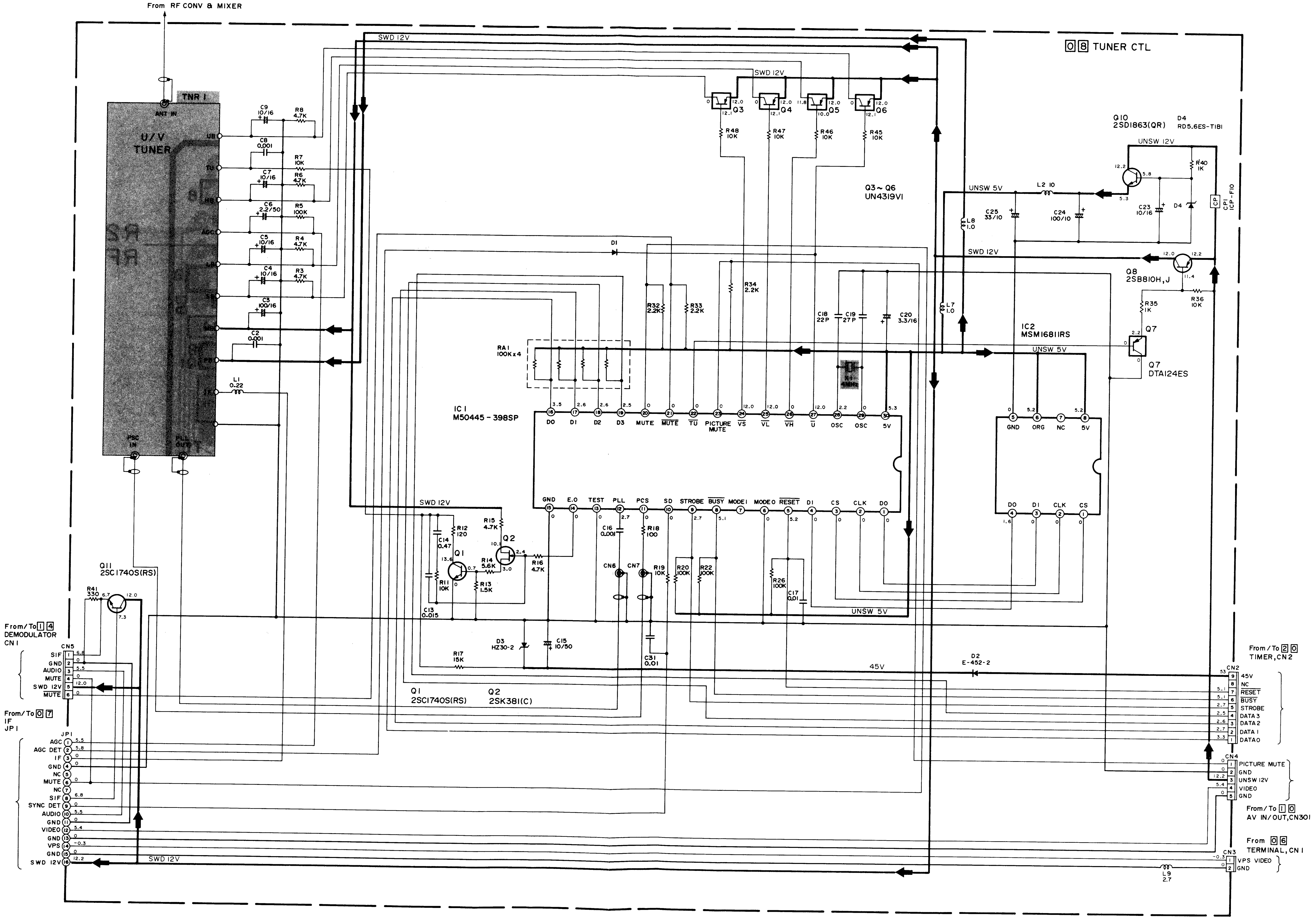
Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode. (3 ch)

3.29 IF CIRCUIT BOARD



T2
VCO
R21
RF AGC
R40
COLOR LEVEL
IF PWB PB10047
PB10047F
IF PWB ASS'Y
CN1
SAW1
SAW2
IC1

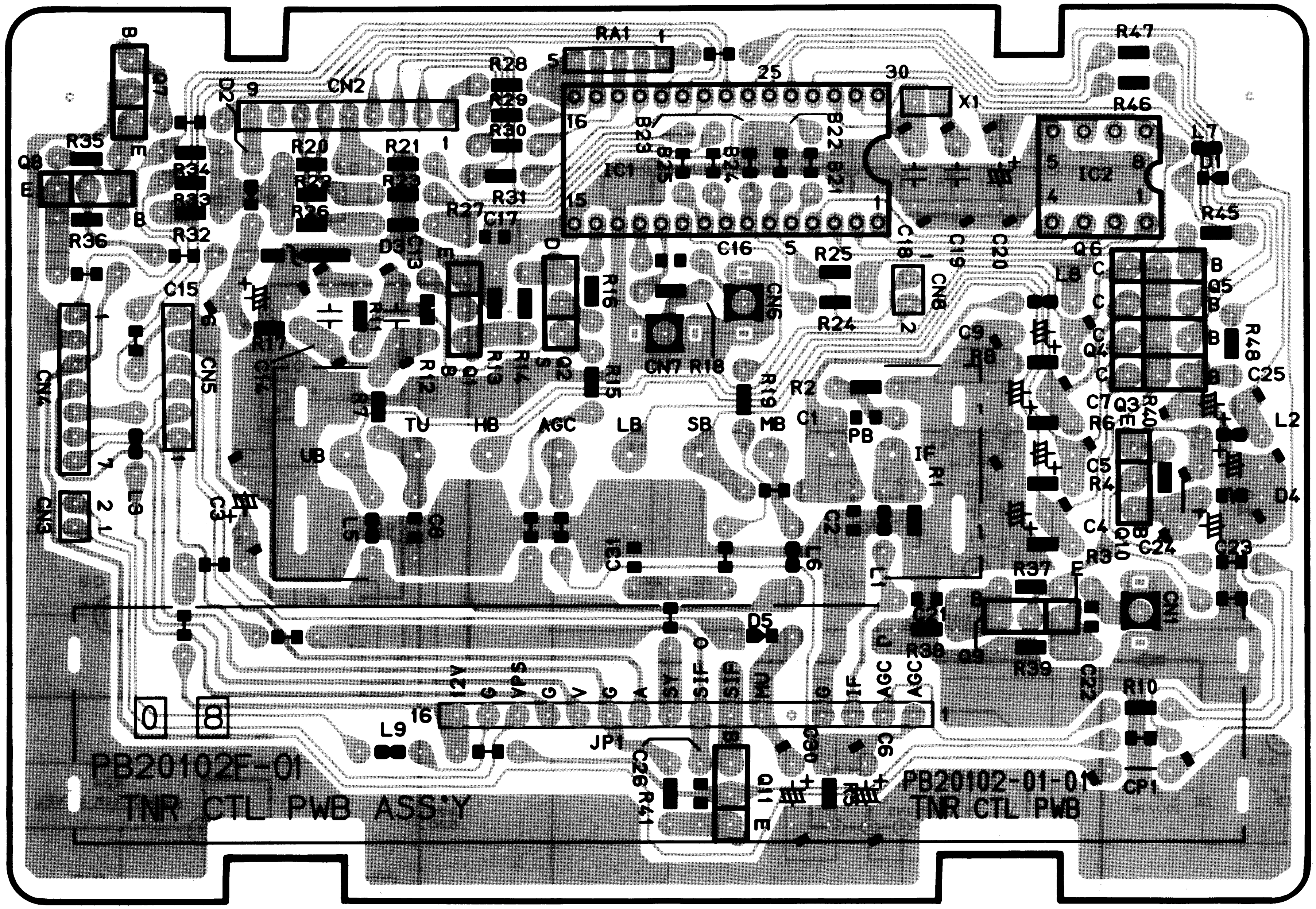
3.30 TUNER CONTORL SCHEMATIC DIAGRAM



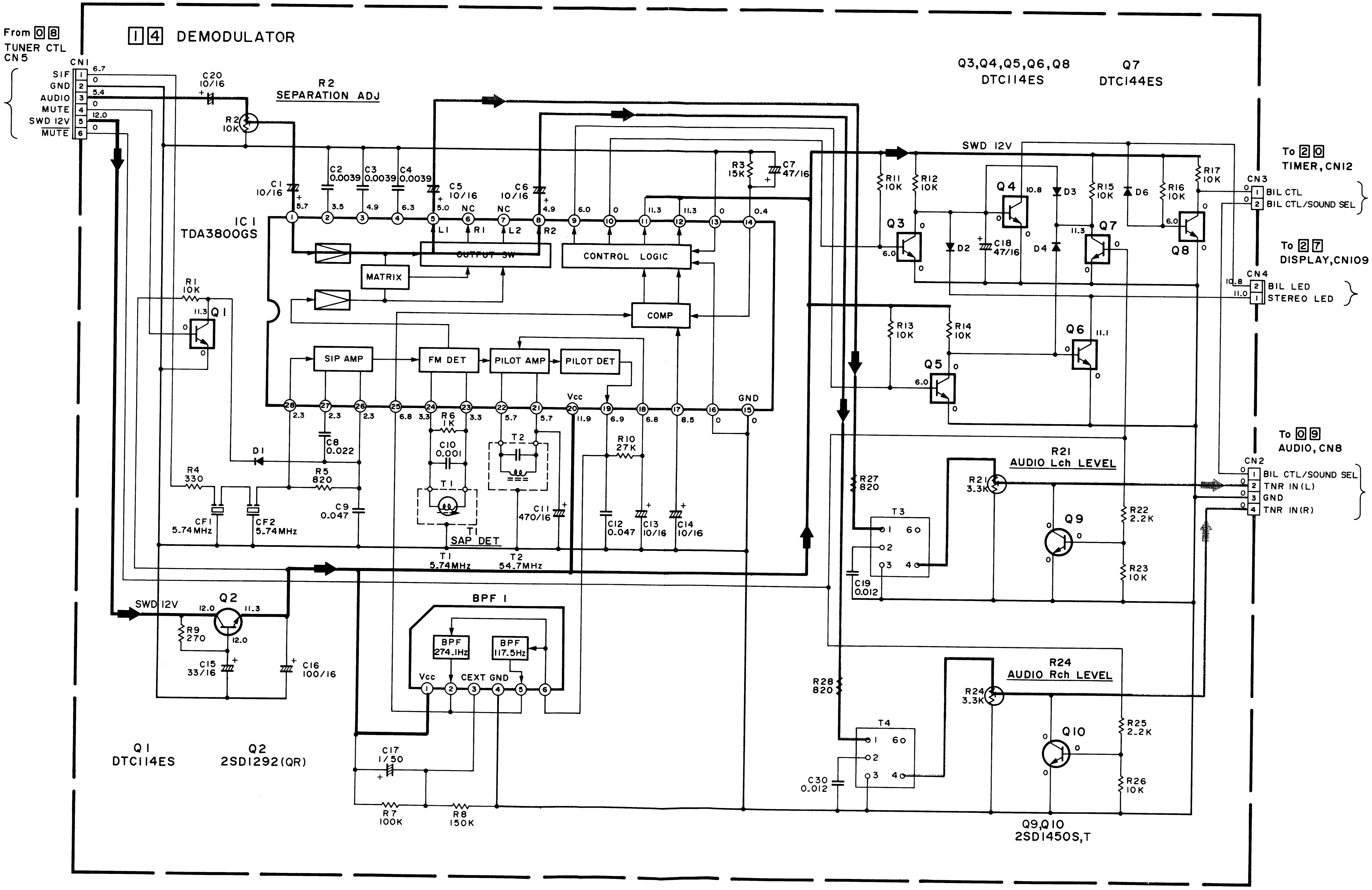
From RF CONV & MIXER
08 TUNER CTL
TNR 1
U/V TUNER
ANT IN
PSC IN
PLL OUT
SWD 12V
UNSW 12V
UNSW 5V
45V
Q3 Q4 Q5 Q6
Q3 ~ Q6 UN4319VI
R48 10K
R47 10K
R46 10K
R45 10K
Q10 2SD1863(QR)
D4 RD5.6ES-T1B1
R40 1K
L2 10
C25 33/10
C24 100/10
C23 10/16
CP1 ICP-F10
L8 1.0
L7 1.0
Q8 2SB810H,J
R35 1K
R36 10K
Q7 DTA124ES
IC2 MSM1681IRS
IC1 M50445-398SP
RA1 100K x 4
D1
R32 2.2K
R33 2.2K
R34 2.2K
C18 22P
C19 27P
C20 3.3/16
C9 10/16
C8 0.001
C7 10/16
C6 2.2/50
C5 10/16
C4 10/16
C3 100/16
C2 0.001
L1 0.22
R8 4.7K
R7 10K
R6 4.7K
R5 100K
R4 4.7K
R3 4.7K
DO DI D2 D3 MUTE MUTE TU PICTURE MUTE VS VL VH U OSC OSC 5V
GND E.O TEST PLL PCS SD STROBE BUSY MODE1 MODE0 RESET DI CS CLK DO
GND ORG NC 5V
DO DI CLK CS
R15 4.7K
R12 120
C14 0.47
Q1
Q2
R11 10K
R14 5.6K
R13 1.5K
R16 4.7K
C13 0.015
C16 0.001
R18 100
CN6
CN7
R19 10K
R20 100K
R22 100K
R26 100K
C17 0.01
D3 HZ30-2
C15 10/50
C31 0.01
R17 15K
D2 E-452-2
Q11 2SC1740S(RS)
R41 330
Q1 2SC1740S(RS)
Q2 2SK381(C)
From/To 14 DEMODULATOR CN1
CN5
SIF
GND
AUDIO
MUTE
SWD 12V
MUTE
From/To 07 IF JP1
JP1
AGC
AGC DET
IF
GND
NC
MUTE
NC
SIF
SYNC DET
AUDIO
GND
VIDEO
GND
VPS
GND
SWD 12V
From/To 20 TIMER,CN2
CN2
45V
NC
RESET
BUSY
STROBE
DATA 3
DATA 2
DATA 1
DATA 0
CN4
PICTURE MUTE
GND
UNSW 12V
VIDEO
GND
From/To 10 AV IN/OUT,CN301
From 06 TERMINAL,CN1
CN3
VPS VIDEO
GND
L9 2.7
6
5
4
3
2
1
A
B
C
E
F
G
H

Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode. (3 ch)

3.31 TUNER CONTROL CIRCUIT BOARD


RA1
CN2
IC1
IC2
X1
R47
R46
R28
R29
R30
R31
R20
R21
R22
R23
R26
R27
C17
R34
R33
R32
R35
R36
Q8
Q7
D2
D3
C13
C15
CN5
CN4
CN3
CN6
CN7
CN8
C16
C18
C19
C20
R25
R24
R16
R18
R19
R15
R17
C14
R12
R13
R14
Q1
Q2
R7
R8
R2
R1
C1
C2
C3
C4
C5
C7
C9
C25
L2
L3
L5
L6
L7
L8
L9
Q3
Q4
Q5
Q6
Q9
Q10
Q11
R37
R38
R39
R40
R45
R48
R4
R6
R10
R41
C21
C22
C23
C24
C26
C30
C31
D4
D5
CN1
CP1
JP1
TU
HB
AGC
LB
SB
MB
UB
PB
IF
12V
G
VPS
G
V
G
A
SY
SIF O
SIF
MU
G
IF
AGC
AGC
16
1
PB20102F-01
TNR CTL PWB ASS'Y
PB20102-01-01
TNR CTL PWB

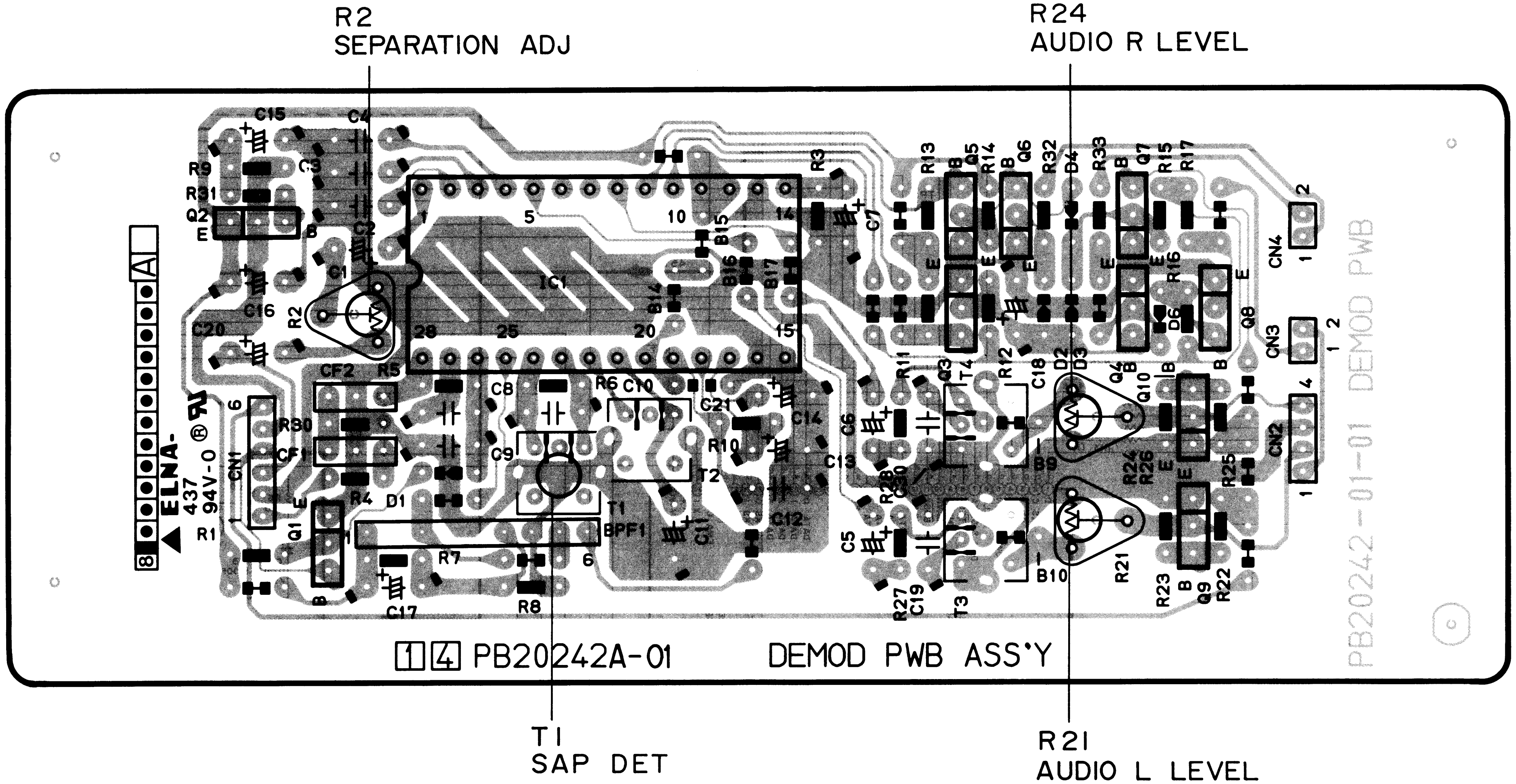
3.32 DEMODULATOR SCHEMATIC DIAGRAM


From 08
TUNER CTL
CN5
CN1
SIF 1 6.7
GND 2 0
AUDIO 3 5.4
MUTE 4 0
SWD 12V 5 12.0
MUTE 6 0
14 DEMODULATOR
C20 10/16
R2 SEPARATION ADJ
R2 10K
C1 10/16
C2 0.0039
C3 0.0039
C4 0.0039
C5 10/16
C6 10/16
R3 15K
C7 47/16
IC1 TDA3800GS
NC
NC
L1
R1
L2
R2
OUTPUT SW
MATRIX
CONTROL LOGIC
COMP
SIP AMP
FM DET
PILOT AMP
PILOT DET
Vcc
GND
R1 10K
Q1
D1
R4 330
R5 820
C9 0.047
C8 0.022
CF1 5.74MHz
CF2 5.74MHz
R6 1K
C10 0.001
T1
T1 SAP DET
T2
C11 470/16
R10 27K
C12 0.047
C13 10/16
C14 10/16
T1 5.74MHz
T2 54.7MHz
SWD 12V
Q2
R9 270
C15 33/16
C16 100/16
BPF 1
BPF 274.1Hz
BPF 117.5Hz
Vcc
CEXT GND
C17 1/50
R7 100K
R8 150K
Q1 DTC114ES
Q2 2SD1292(QR)
Q3,Q4,Q5,Q6,Q8 DTC114ES
Q7 DTC144ES
SWD 12V
R11 10K
R12 10K
Q3
Q4
D3
R15 10K
D6
R16 10K
R17 10K
Q7
Q8
D2
C18 47/16
D4
R13 10K
R14 10K
Q5
Q6
To 20 TIMER, CN12
CN3
1 BIL CTL
2 BIL CTL/SOUND SEL
To 27 DISPLAY, CN109
CN4
2 BIL LED
1 STEREO LED
To 09 AUDIO, CN8
CN2
1 BIL CTL/SOUND SEL
2 TNR IN(L)
3 GND
4 TNR IN(R)
R27 820
T3
C19 0.012
R21 AUDIO Lch LEVEL
R21 3.3K
Q9
R22 2.2K
R23 10K
R28 820
T4
C30 0.012
R24 AUDIO Rch LEVEL
R24 3.3K
Q10
R25 2.2K
R26 10K
Q9,Q10 2SD1450S,T

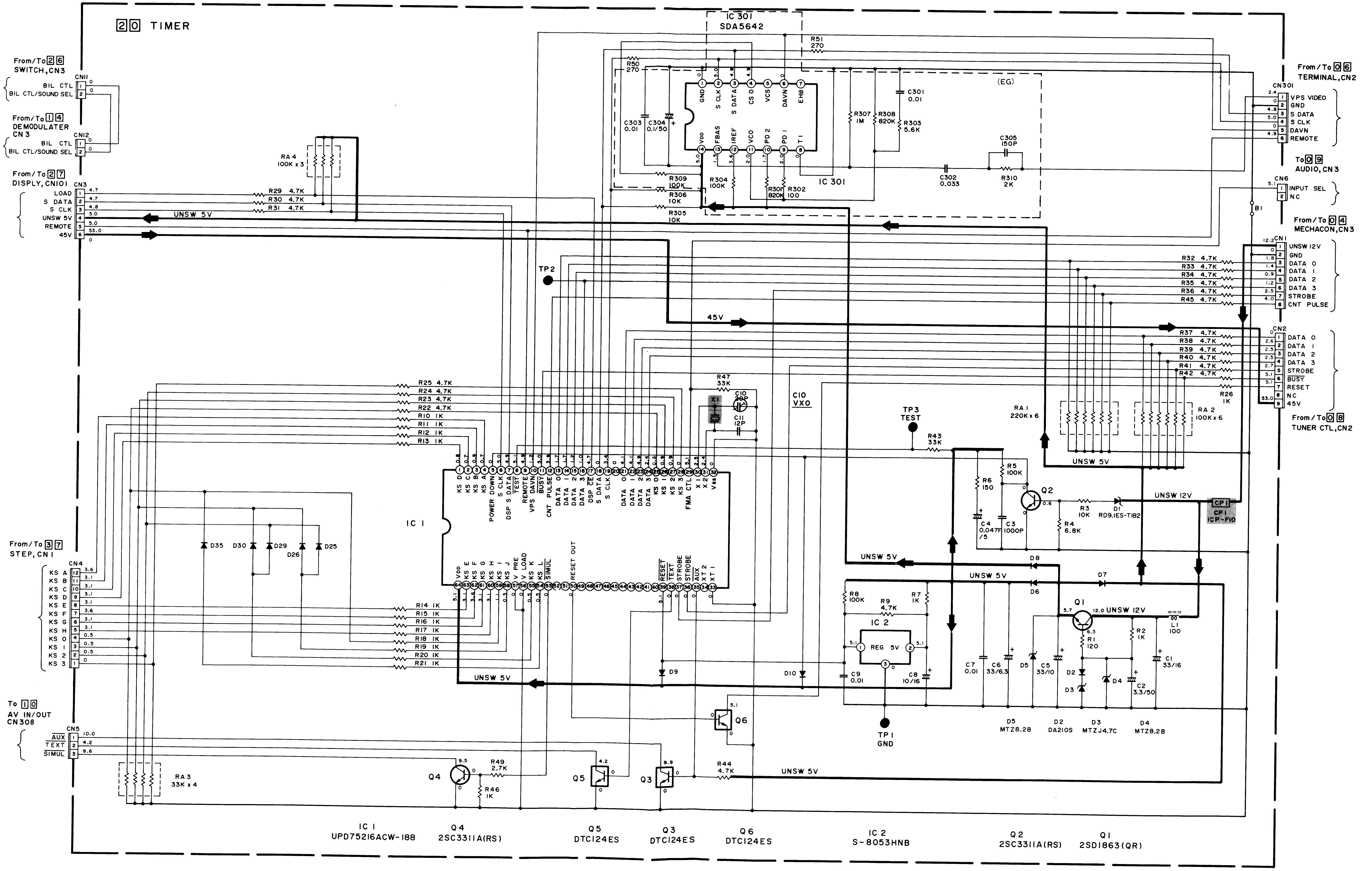
Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode. (3 ch)

]

3.33 DEMODULATOR CIRCUIT BOARD

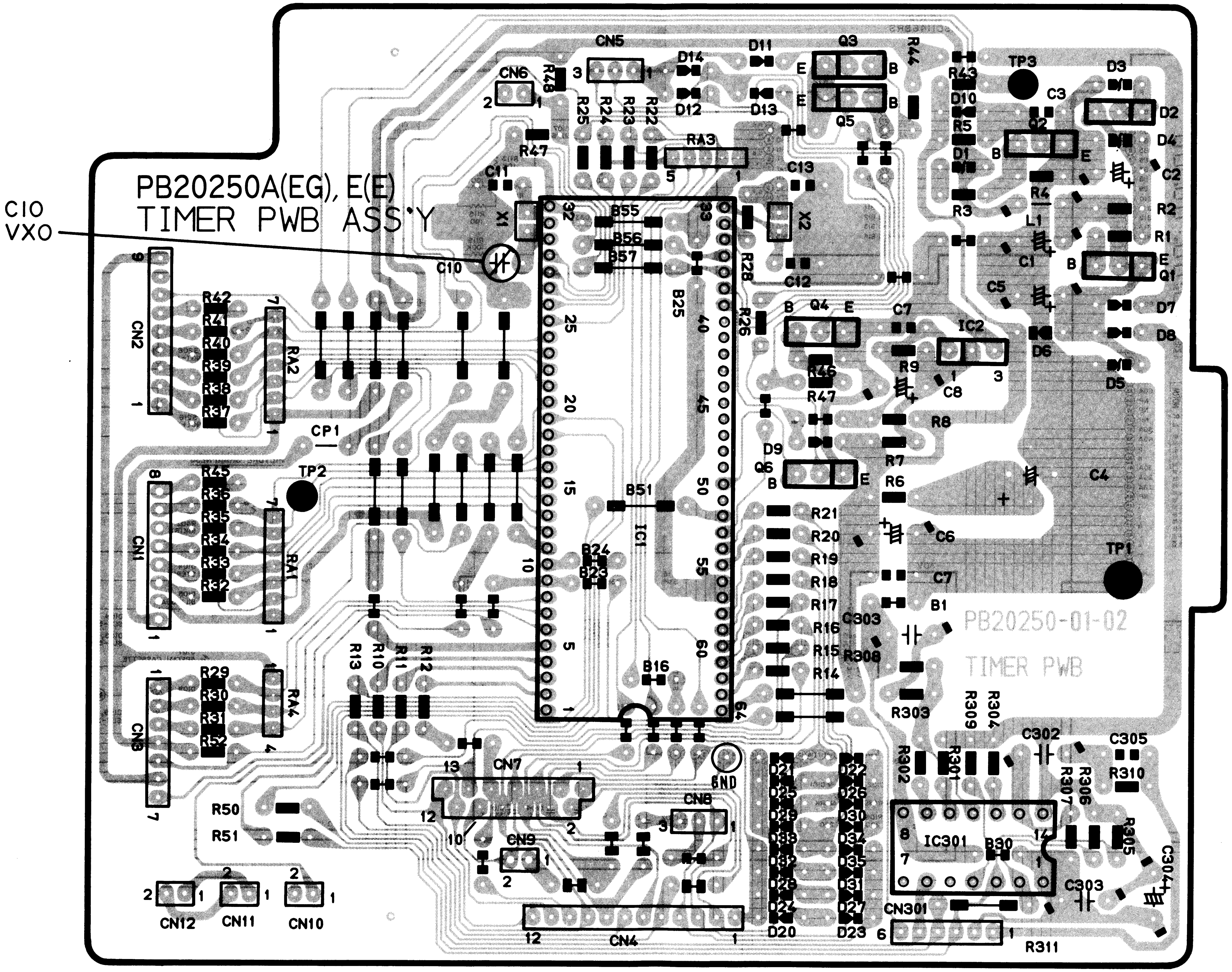

R2
SEPARATION ADJ
R24
AUDIO R LEVEL
T1
SAP DET
R21
AUDIO L LEVEL
1 4 PB20242A-01
DEMOD PWB ASS'Y
PB20242-01-01 DEMOD PWB
IC1
CN1
CN2
CN3
CN4
ELNA-
437
94V-0
A
C15
C4
C3
C2
C1
C16
C20
C17
R9
R31
Q2
Q1
R1
R4
D1
CF2
CF1
R5
R30
R7
R8
C8
C9
R6
C10
C21
R10
T2
BPF1
C11
C12
C13
C14
R3
C7
B15
B16
B17
B14
R11
R12
C6
C5
R28
C30
R27
C19
T3
T4
Q3
C18
D2
D3
B9
B10
Q4
Q10
R13
R14
Q5
Q6
R32
D4
R33
Q7
R15
R17
R16
D6
Q8
R24
R26
R25
R21
R23
Q9
R22
1
5
10
14
15
20
25
28

3.34 TIMER SCHEMATIC DIAGRAM


20 TIMER
From/To 26 SWITCH, CN3
CN11
BIL CTL
BIL CTL/SOUND SEL
From/To 14 DEMODULATER CN3
CN12
BIL CTL
BIL CTL/SOUND SEL
From/To 27 DISPLY, CN101
CN3
LOAD
S DATA
S CLK
UNSW 5V
REMOTE
45V
RA4 100K x 3
R29 4.7K
R30 4.7K
R31 4.7K
UNSW 5V
IC 301
SDA5642
GND
S CLK
S DATA
CS O
VCS
DAVN
EHB
VDD
FBAS
IREF
VCO
PD 2
PD 1
T I
R50 270
R51 270
C303 0.01
C304 0.1/50
R309 100K
R306 10K
R305 10K
R304 100K
R301 820K
R302 100
R307 1M
R308 820K
R303 5.6K
C301 0.01
(EG)
C305 150P
C302 0.033
R310 2K
From/To 06 TERMINAL, CN2
CN301
VPS VIDEO
GND
S DATA
S CLK
DAVN
REMOTE
To 09 AUDIO, CN3
CN6
INPUT SEL
NC
B1
From/To 04 MECHACON, CN3
CN1
UNSW 12V
GND
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
CNT PULSE
R32 4.7K
R33 4.7K
R34 4.7K
R35 4.7K
R36 4.7K
R45 4.7K
TP2
45V
CN2
DATA 0
DATA 1
DATA 2
DATA 3
STROBE
BUSY
RESET
NC
45V
R37 4.7K
R38 4.7K
R39 4.7K
R40 4.7K
R41 4.7K
R42 4.7K
R26 1K
From/To 08 TUNER CTL, CN2
RA 1 220K x 6
RA 2 100K x 6
R47 33K
X1
C10 20P
C11 12P
C10 VXO
TP3 TEST
R43 33K
R25 4.7K
R24 4.7K
R23 4.7K
R22 4.7K
R10 1K
R11 1K
R12 1K
R13 1K
IC 1
KS D
KS C
KS B
KS A
POWER DOWN
S CLK
DSP S DATA
TEST
REMOTE
VPS DAVN
BUSY
CNT PULSE
DATA 0
DATA 1
DATA 2
DATA 3
DSP CE
S CLK
DATA 0
DATA 1
DATA 2
DATA 3
KS 0
KS 1
KS 2
KS 3
FMA CTL
X 1
X 2
VSS
VDD
KS E
KS F
KS G
KS H
KS I
KS J
V PRE
V LOAD
KS K
KS L
SIMUL
RESET OUT
RESET
TEXT
STROBE
STROBE
AUX
XT 2
XT 1
UNSW 5V
R5 100K
R6 150
Q2
C4 0.047F/5
C3 1000P
R3 10K
D1 RD9.1ES-T1B2
R4 6.8K
UNSW 12V
CP1 ICP-F10
From/To 37 STEP, CN1
CN4
KS A
KS B
KS C
KS D
KS E
KS F
KS G
KS H
KS 0
KS 1
KS 2
KS 3
D35
D30
D29
D26
D25
R14 1K
R15 1K
R16 1K
R17 1K
R18 1K
R19 1K
R20 1K
R21 1K
UNSW 5V
D9
D10
UNSW 5V
D8
D6
D7
R8 100K
R9 4.7K
R7 1K
IC 2
REG 5V
C9 0.01
C8 10/16
TP1 GND
C7 0.01
C6 33/6.3
D5
C5 33/10
Q1
UNSW 12V
R1 120
R2 1K
L1 100
C1 33/16
D2
D3
D4
C2 3.3/50
D5 MTZ8.2B
D2 DA210S
D3 MTZJ4.7C
D4 MTZ8.2B
To 10 AV IN/OUT CN308
CN5
AUX
TEXT
SIMUL
RA3 33K x 4
Q4
R49 2.7K
R46 1K
Q5
Q3
Q6
R44 4.7K
UNSW 5V
IC 1 UPD75216ACW-188
Q4 2SC3311A(RS)
Q5 DTC124ES
Q3 DTC124ES
Q6 DTC124ES
IC 2 S-8053HNB
Q2 2SC3311A(RS)
Q1 2SD1863(QR)

Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode.

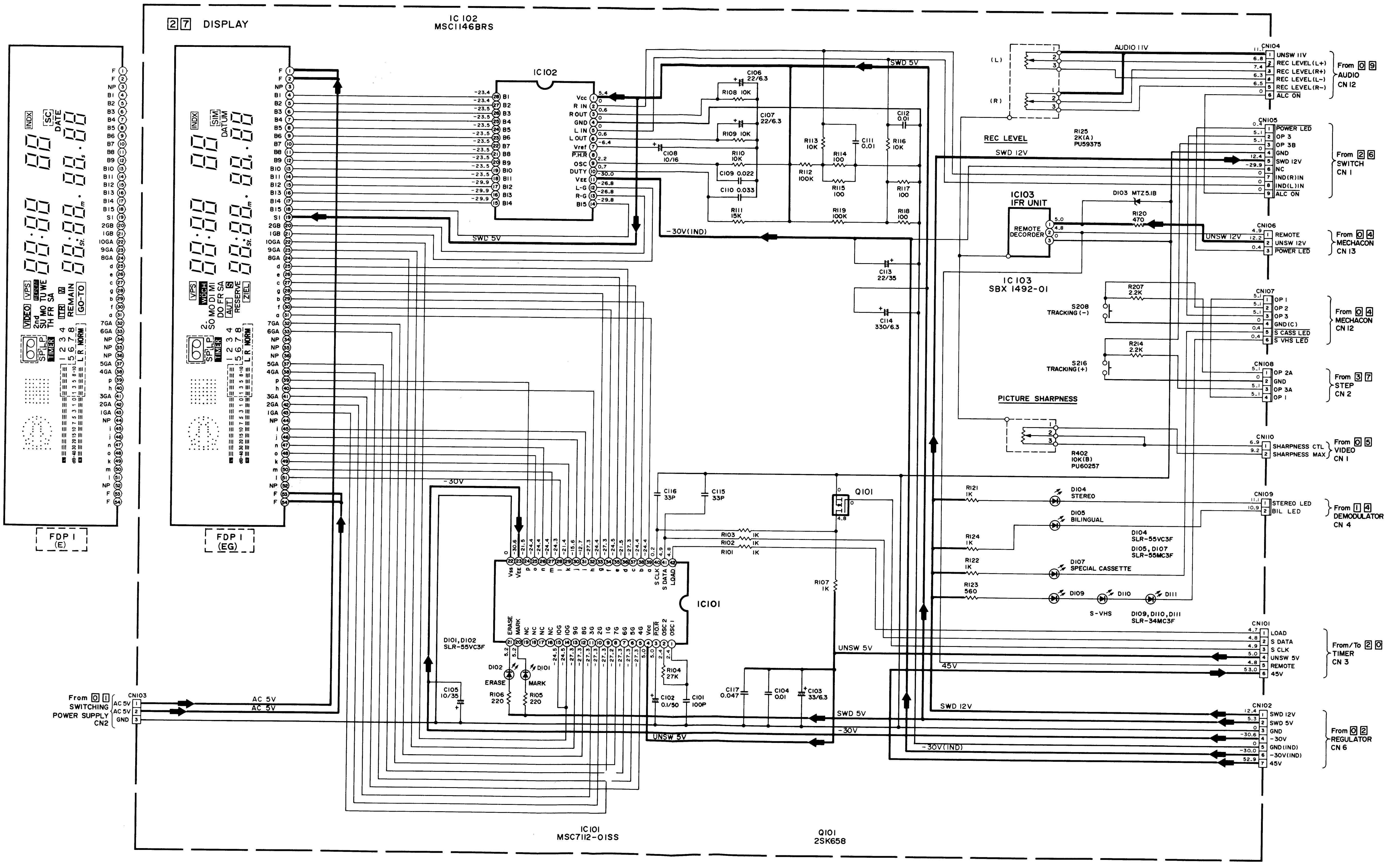
3.35 TIMER CIRCUIT BOARD



C10
VXO
PB20250A(EG), E(E)
TIMER PWB ASS'Y
PB20250-01-02
TIMER PWB
IC1
IC2
IC301
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN11
CN12
CN301
TP1
TP2
TP3
GND
X1
X2
Q1
Q2
Q3
Q4
Q5
Q6
L1
CP1
RA1
RA2
RA3
RA4
B1
B16
B23
B24
B25
B30
B51
B55
B56
B57
C1
C2
C3
C4
C5
C6
C7
C8
C11
C12
C13
C302
C303
C304
C305
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R50
R51
R52
R301
R302
R303
R304
R305
R306
R307
R308
R309
R310
R311
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D30
D31
D32
D33
D34
D35

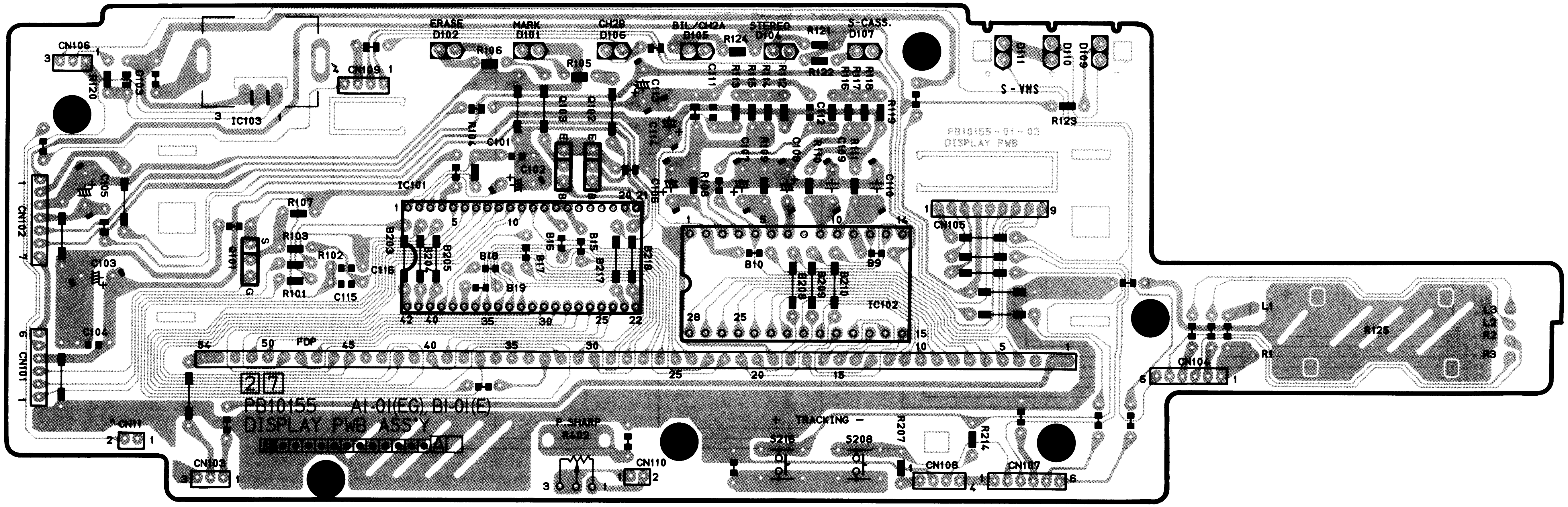
6
5
4
3
2
1
A
B
C
E
F
G
H

3.36 DISPLAY SCHEMATIC DIAGRAM


27 DISPLAY
IC 102
MSC1146BRS
IC102
IC101
MSC7112-01SS
Q101
2SK658
IC103
IFR UNIT
REMOTE DECORDER
IC 103
SBX 1492-01
FDP 1
(E)
FDP 1
(EG)
SWD 5V
-30V(IND)
-30V
UNSW 5V
45V
SWD 12V
AC 5V
UNSW 12V
AUDIO 11V
REC LEVEL
PICTURE SHARPNESS
S208
TRACKING (-)
S216
TRACKING (+)
R207
2.2K
R214
2.2K
R125
2K(A)
PU59375
R402
10K(B)
PU60257
D103 MTZ5.1B
R120
470
D104
STEREO
D105
BILINGUAL
D107
SPECIAL CASSETTE
D109
D110
D111
S-VHS
D104
SLR-55VC3F
D105, D107
SLR-55MC3F
D109, D110, D111
SLR-34MC3F
D101, D102
SLR-55VC3F
D102
ERASE
D101
MARK
R106
220
R105
220
C105
10/35
C102
0.1/50
C101
100P
R104
27K
C117
0.047
C104
0.01
C103
33/6.3
C116
33P
C115
33P
R103 1K
R102 1K
R101 1K
R107
1K
R121
1K
R124
1K
R122
1K
R123
560
C106
22/6.3
C107
22/6.3
C108
10/16
R108 10K
R109 10K
R110
10K
C109 0.022
C110 0.033
R111
15K
R112
100K
R113
10K
R114
100
R115
100
C111
0.01
C112
0.01
R116
10K
R117
100
R118
100
R119
100K
C113
22/35
C114
330/6.3
CN104
UNSW 11V
REC LEVEL(L+)
REC LEVEL(R+)
REC LEVEL(L-)
REC LEVEL(R-)
ALC ON
From 09 AUDIO CN 12
CN105
POWER LED
OP 3
OP 3B
GND
SWD 12V
NC
IND(R)IN
IND(L)IN
ALC ON
From 26 SWITCH CN 1
CN106
REMOTE
UNSW 12V
POWER LED
From 04 MECHACON CN 13
CN107
OP 1
OP 2
OP 3
GND(C)
S CASS LED
S VHS LED
From 04 MECHACON CN 12
CN108
OP 2A
GND
OP 3A
OP 1
From 37 STEP CN 2
CN110
SHARPNESS CTL
SHARPNESS MAX
From 05 VIDEO CN 1
CN109
STEREO LED
BIL LED
From 14 DEMODULATOR CN 4
CN101
LOAD
S DATA
S CLK
UNSW 5V
REMOTE
45V
From/To 20 TIMER CN 3
CN102
SWD 12V
SWD 5V
GND
-30V
GND(IND)
-30V(IND)
45V
From 02 REGULATOR CN 6
CN103
From 01 SWITCHING POWER SUPPLY CN2
AC 5V
AC 5V
GND

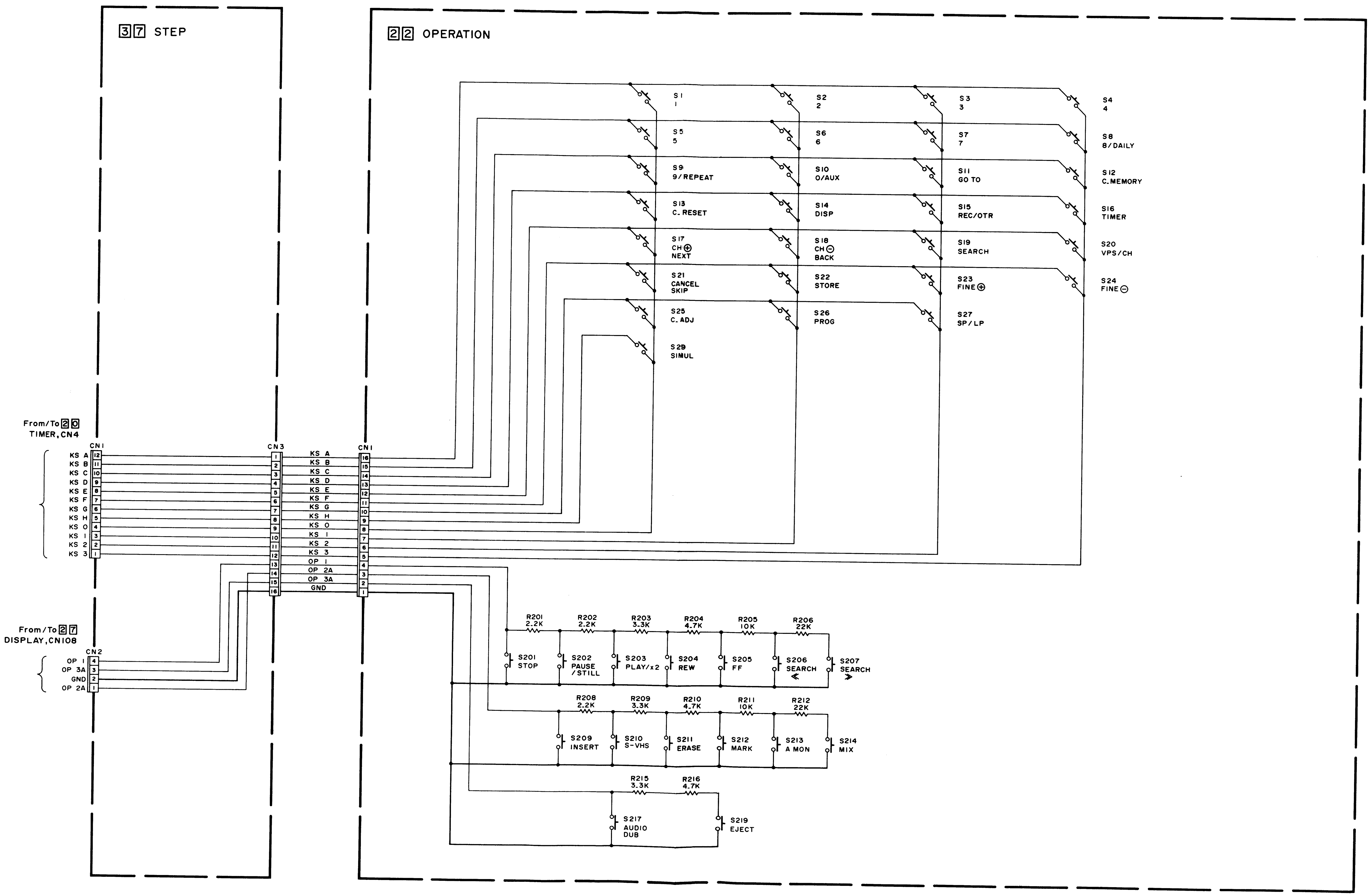
Note: Voltages are DC-measured with a digital voltmeter during stop and tuner mode.

3.37 DISPLAY CIRCUIT BOARD


ERASE D102
MARK D101
CH2B D106
BIL/CH2A D105
STEREO D104
S-CASS. D107
S-VHS
D111
D110
D109
CN106
CN109
IC103
R120
D103
R106
R105
R124
R121
R122
R123
R119
Q103
Q102
Q101
C101
C102
C103
C104
C105
C111
C113
C114
C115
C116
R101
R102
R103
R107
R108
R104
IC101
IC102
CN102
CN101
CN105
CN104
CN111
CN103
CN110
CN108
CN107
FDP
PB10155 - 01 - 03
DISPLAY PWB
PB10155 A1-01(EG), B1-01(E)
DISPLAY PWB ASS'Y
P.SHARP
R402
TRACKING
S216
S208
R207
R214
R125
L1
L2
L3
R1
R2
R3
B9
B10
B15
B16
B17
B18
B19
B203
B204
B205
B208
B209
B210
B216
B217

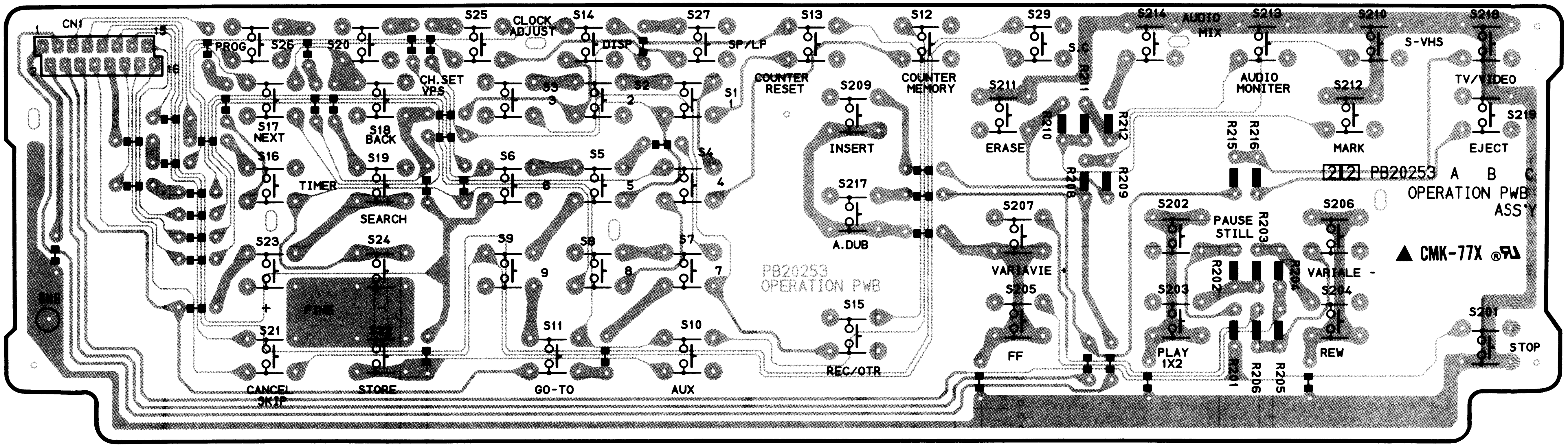
6
5
4
3
2
1
A
B
C
E
F
G
H

3.38 OPERATION AND STEP SCHEMATIC DIAGRAMS

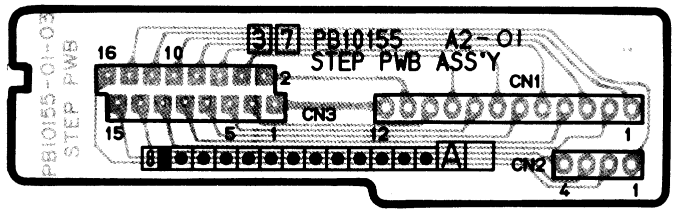

37 STEP
22 OPERATION
From/To 20 TIMER, CN4
CN1
KS A 12
KS B 11
KS C 10
KS D 9
KS E 8
KS F 7
KS G 6
KS H 5
KS O 4
KS 1 3
KS 2 2
KS 3 1
From/To 27 DISPLAY, CN108
CN2
OP 1 4
OP 3A 3
GND 2
OP 2A 1
CN3
KS A
KS B
KS C
KS D
KS E
KS F
KS G
KS H
KS O
KS 1
KS 2
KS 3
OP 1
OP 2A
OP 3A
GND
CN1
S1 1
S2 2
S3 3
S4 4
S5 5
S6 6
S7 7
S8 8/DAILY
S9 9/REPEAT
S10 0/AUX
S11 GO TO
S12 C.MEMORY
S13 C. RESET
S14 DISP
S15 REC/OTR
S16 TIMER
S17 CH⊕ NEXT
S18 CH⊖ BACK
S19 SEARCH
S20 VPS/CH
S21 CANCEL SKIP
S22 STORE
S23 FINE⊕
S24 FINE⊖
S25 C. ADJ
S26 PROG
S27 SP/LP
S29 SIMUL
R201 2.2K
R202 2.2K
R203 3.3K
R204 4.7K
R205 10K
R206 22K
S201 STOP
S202 PAUSE /STILL
S203 PLAY/x2
S204 REW
S205 FF
S206 SEARCH ≪
S207 SEARCH ≫
R208 2.2K
R209 3.3K
R210 4.7K
R211 10K
R212 22K
S209 INSERT
S210 S-VHS
S211 ERASE
S212 MARK
S213 A MON
S214 MIX
R215 3.3K
R216 4.7K
S217 AUDIO DUB
S219 EJECT
6
5
4
3
2
1
A
B
C
E
F
G
H

3.39 OPERATION AND STEP CIRCUIT BOARDS

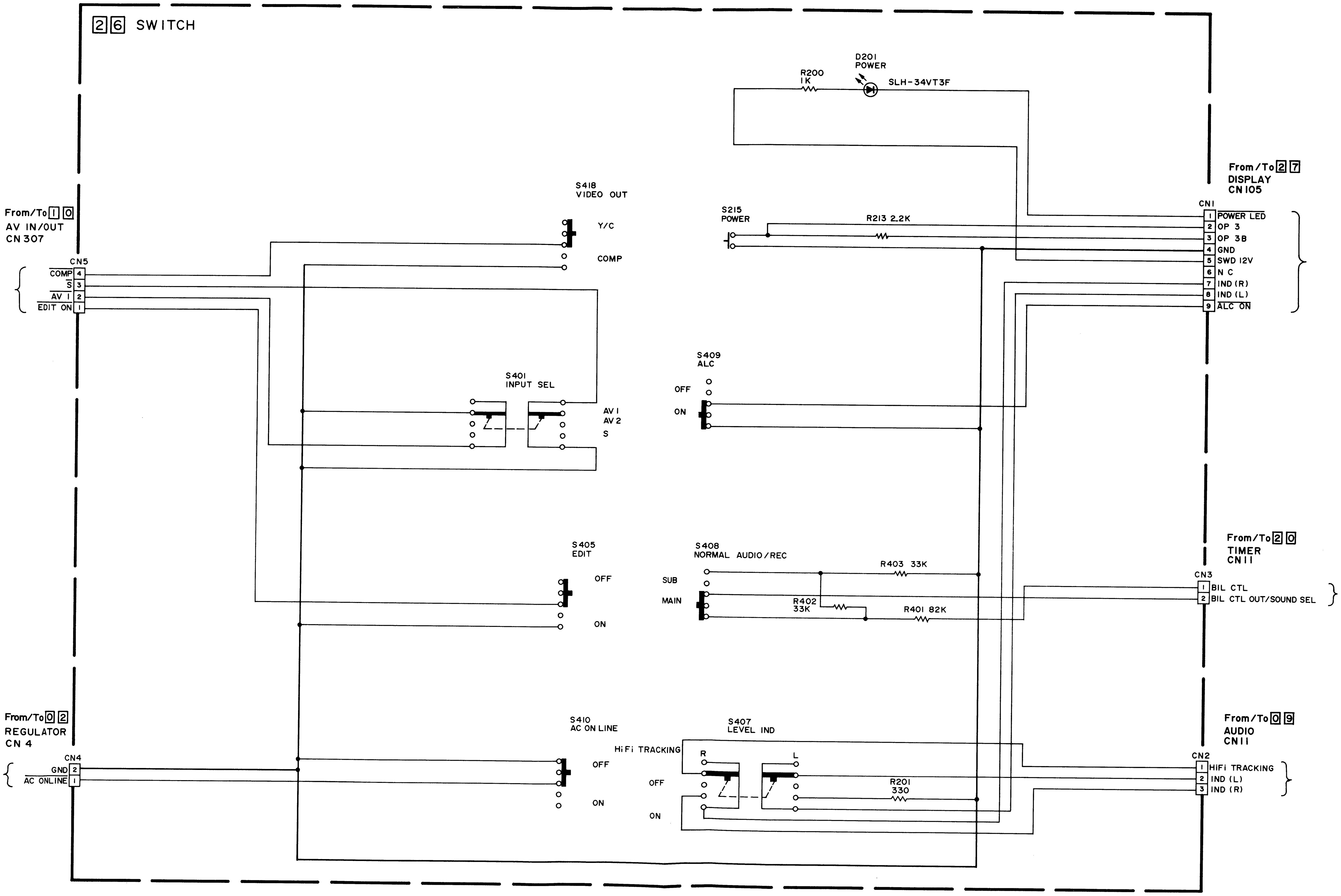
– OPERATION –


CN1
1
2
15
16
PROG
S26
S20
S25
CLOCK ADJUST
S14
DISP
S27
SP/LP
S13
S12
S29
S.C
S214
AUDIO MIX
S213
S210
S-VHS
S218
CH.SET VPS
S3
3
S2
2
S1
1
COUNTER RESET
S209
COUNTER MEMORY
S211
R211
R210
R212
AUDIO MONITER
S212
TV/VIDEO
S17
NEXT
S18
BACK
INSERT
ERASE
R215
R216
MARK
EJECT
S219
S16
S19
S6
S5
S4
4
TIMER
6
5
S217
R208
R209
2|2 PB20253 A B C
OPERATION PWB ASS'Y
SEARCH
S207
S202
PAUSE STILL
R203
S206
S23
S24
S9
S8
S7
A.DUB
CMK-77X
9
8
7
PB20253 OPERATION PWB
VARIAVIE +
R202
R204
VARIALE -
S205
S203
S204
+
S15
FINE
S21
S11
S10
S201
FF
PLAY 1X2
REW
STOP
R201
R206
R205
REC/OTR
CANCEL SKIP
STORE
GO-TO
AUX
GND

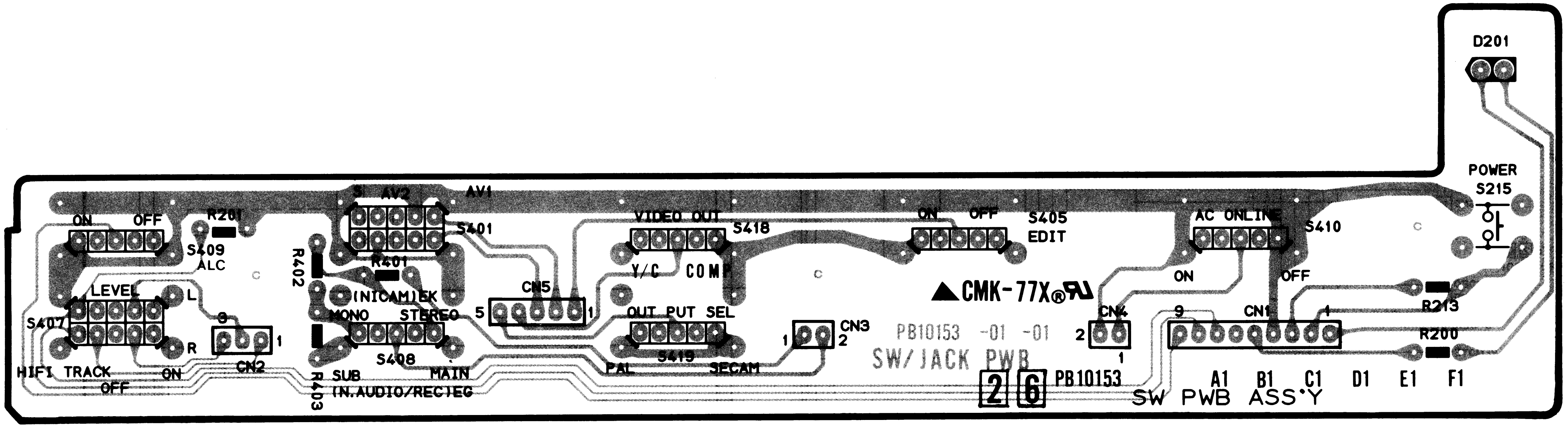
– STEP –


PB10155-01-03 STEP PWB
3|7 PB10155 A2-01
STEP PWB ASS'Y
16
10
2
15
6
1
CN3
12
CN1
1
A
CN2
4
1

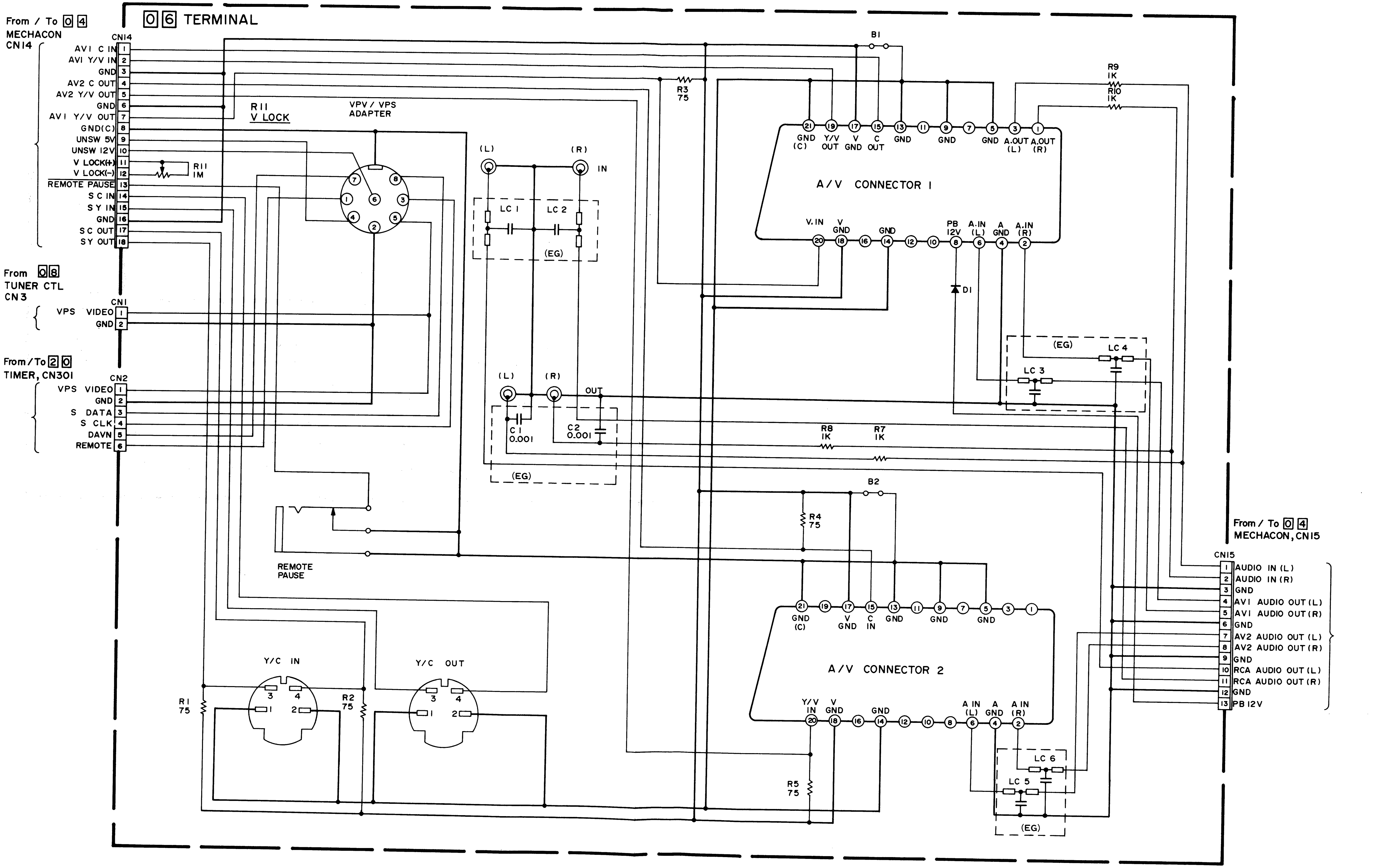
3.40 SWITCH SCHEMATIC DIAGRAM


2 6 SWITCH
D201
POWER
R200
1K
SLH-34VT3F
From/To 2 7
DISPLAY
CN105
CN1
1 POWER LED
2 OP 3
3 OP 3B
4 GND
5 SWD 12V
6 N C
7 IND (R)
8 IND (L)
9 ALC ON
S418
VIDEO OUT
Y/C
COMP
S215
POWER
R213 2.2K
From/To 1 0
AV IN/OUT
CN307
CN5
COMP 4
S 3
AV 1 2
EDIT ON 1
S409
ALC
OFF
ON
S401
INPUT SEL
AV 1
AV 2
S
S405
EDIT
OFF
ON
S408
NORMAL AUDIO/REC
SUB
MAIN
R403 33K
R402
33K
R401 82K
From/To 2 0
TIMER
CN11
CN3
1 BIL CTL
2 BIL CTL OUT/SOUND SEL
From/To 0 2
REGULATOR
CN 4
CN4
GND 2
AC ONLINE 1
S410
AC ON LINE
OFF
ON
S407
LEVEL IND
HiFi TRACKING
R
L
OFF
ON
R201
330
From/To 0 9
AUDIO
CN11
CN2
1 HiFi TRACKING
2 IND (L)
3 IND (R)
6
5
4
3
2
1
A
B
C
E
F
G
H

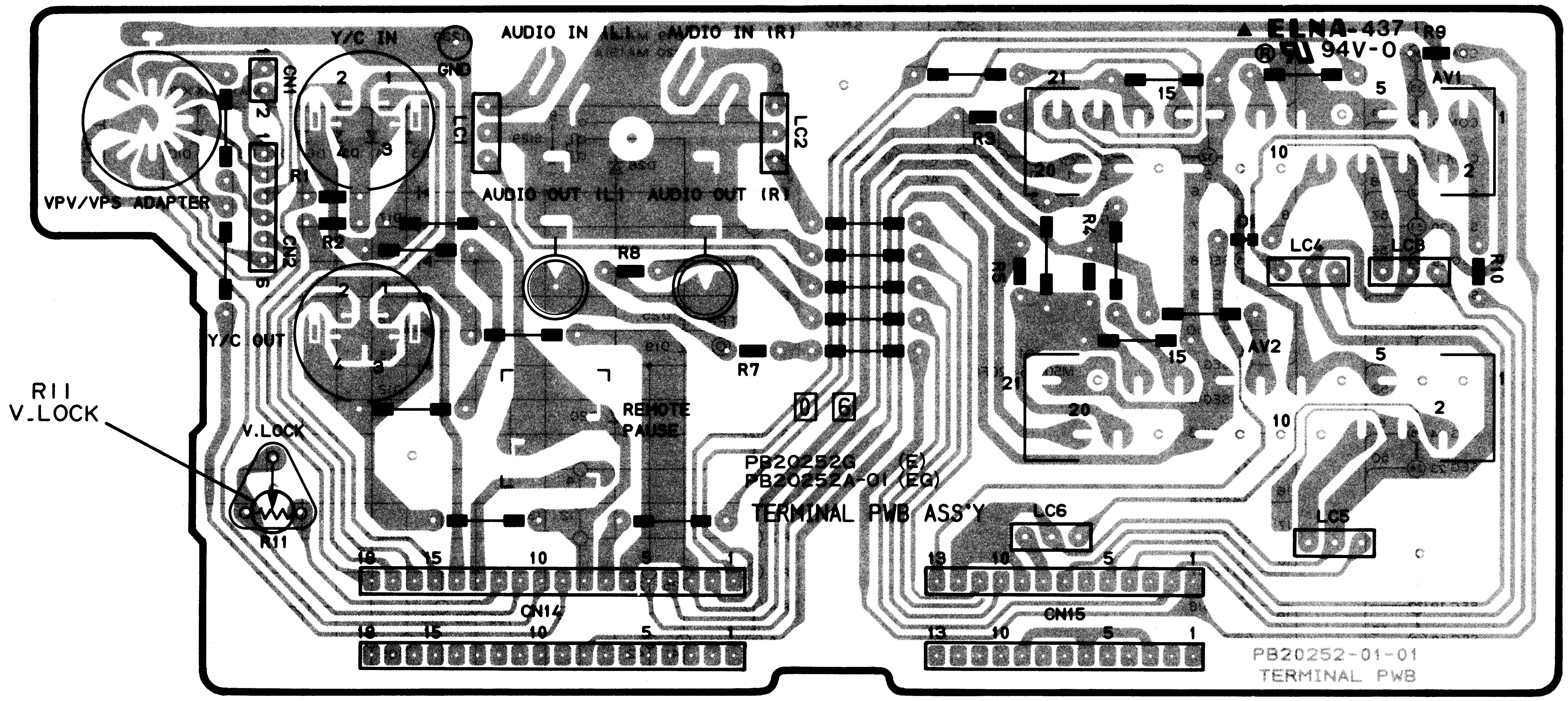
3.41 SWITCH CIRCUIT BOARD


D201
POWER
S215
ON
OFF
R201
S409
ALC
LEVEL
L
R
S407
HIFI TRACK
ON
OFF
3
1
CN2
AV2
AV1
S401
R401
R402
(NICAM)EK
MONO
STEREO
S408
SUB
MAIN
(N.AUDIO/REC)EG
R403
CN5
5
1
VIDEO OUT
S418
Y/C
COMP
OUT PUT SEL
S419
PAL
SECAM
CN3
1
2
ON
OFF
S405
EDIT
CMK-77X
PB10153 -01 -01
SW/JACK PWB
2
6
PB10153
CN4
2
1
AC ONLINE
S410
ON
OFF
9
CN1
1
R213
R200
A1
B1
C1
D1
E1
F1
SW PWB ASS'Y

3.42 TERMINAL SCHEMATIC DIAGRAM

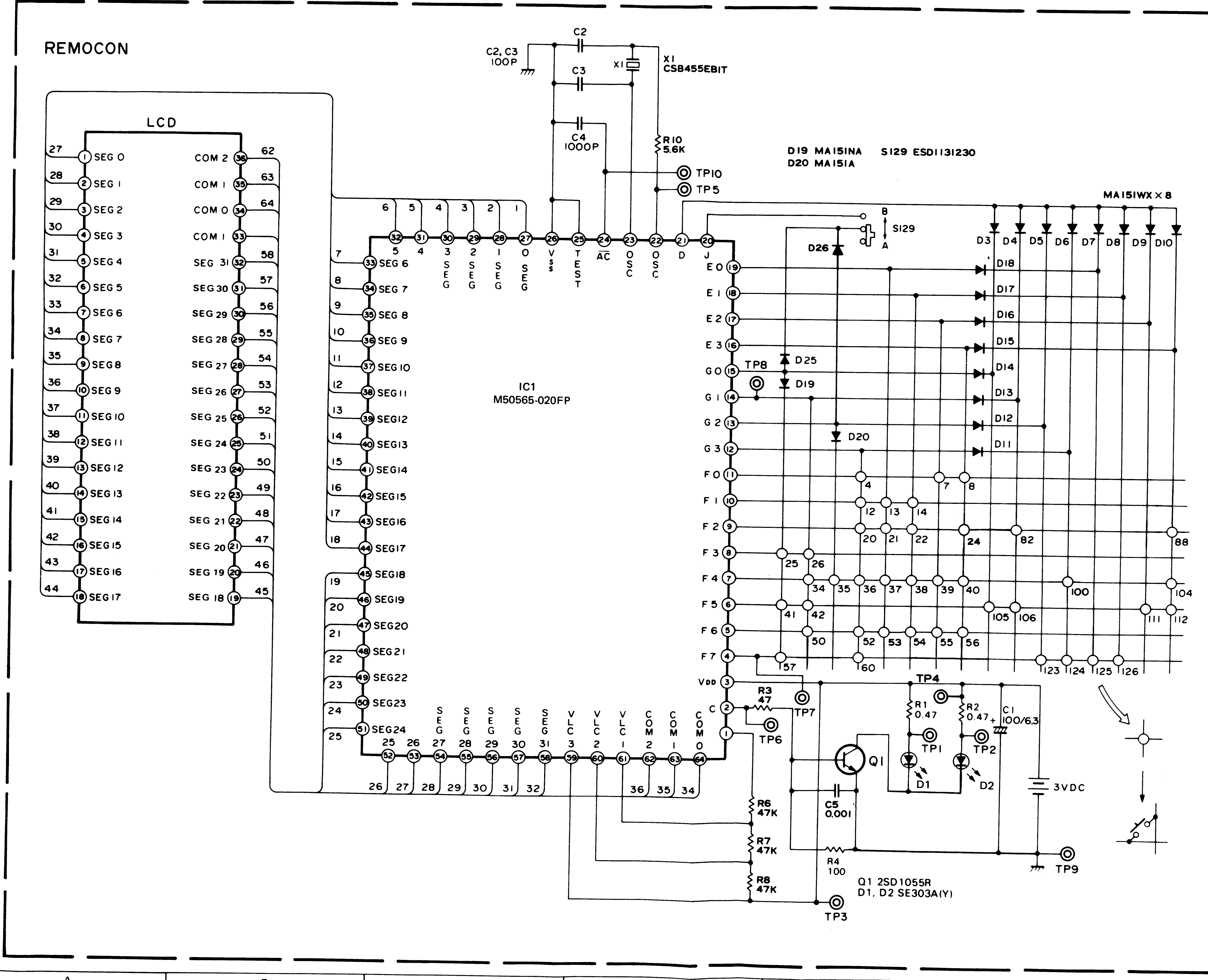

06 TERMINAL
From / To 04
MECHACON
CN14
AVI C IN 1
AVI Y/V IN 2
GND 3
AV2 C OUT 4
AV2 Y/V OUT 5
GND 6
AVI Y/V OUT 7
GND(C) 8
UNSW 5V 9
UNSW 12V 10
V LOCK(+) 11
V LOCK(–) 12
REMOTE PAUSE 13
S C IN 14
S Y IN 15
GND 16
S C OUT 17
S Y OUT 18
R11 IM
R11 V LOCK
VPV / VPS ADAPTER
From 08
TUNER CTL
CN3
CN1
VPS VIDEO 1
GND 2
From/To 20
TIMER, CN301
CN2
VPS VIDEO 1
GND 2
S DATA 3
S CLK 4
DAVN 5
REMOTE 6
REMOTE PAUSE
(L)
(R)
IN
LC 1
LC 2
(EG)
(L)
(R)
OUT
C1 0.001
C2 0.001
(EG)
B1
R3 75
R9 1K
R10 1K
GND (C)
Y/V OUT
V GND
C OUT
GND
GND
GND
A.OUT (L)
A.OUT (R)
A/V CONNECTOR 1
V.IN
V GND
GND
PB 12V
A.IN (L)
A GND
A.IN (R)
D1
(EG)
LC 4
LC 3
R8 1K
R7 1K
B2
R4 75
GND (C)
V GND
C IN
GND
GND
GND
A/V CONNECTOR 2
Y/V IN
V GND
GND
A IN (L)
A GND
A IN (R)
LC 6
LC 5
(EG)
R5 75
Y/C IN
Y/C OUT
R1 75
R2 75
From / To 04
MECHACON, CN15
CN15
1 AUDIO IN (L)
2 AUDIO IN (R)
3 GND
4 AVI AUDIO OUT (L)
5 AVI AUDIO OUT (R)
6 GND
7 AV2 AUDIO OUT (L)
8 AV2 AUDIO OUT (R)
9 GND
10 RCA AUDIO OUT (L)
11 RCA AUDIO OUT (R)
12 GND
13 PB 12V
6
5
4
3
2
1
A
B
C
E
F
G
H

3.43 TERMINAL CIRCUIT BOARD


R11
V.LOCK
Y/C IN
GND
AUDIO IN (L)
AUDIO IN (R)
ELNA-437
94V-0
R9
AV1
CN1
LC1
LC2
AUDIO OUT (L)
AUDIO OUT (R)
VPV/VPS ADAPTER
R1
R2
R3
R4
R5
R7
R8
R10
D1
LC3
LC4
LC5
LC6
AV2
CN2
Y/C OUT
V.LOCK
R11
REMOTE PAUSE
PB20252G (E)
PB20252A-01 (EG)
TERMINAL PWB ASS'Y
CN14
CN15
PB20252-01-01
TERMINAL PWB

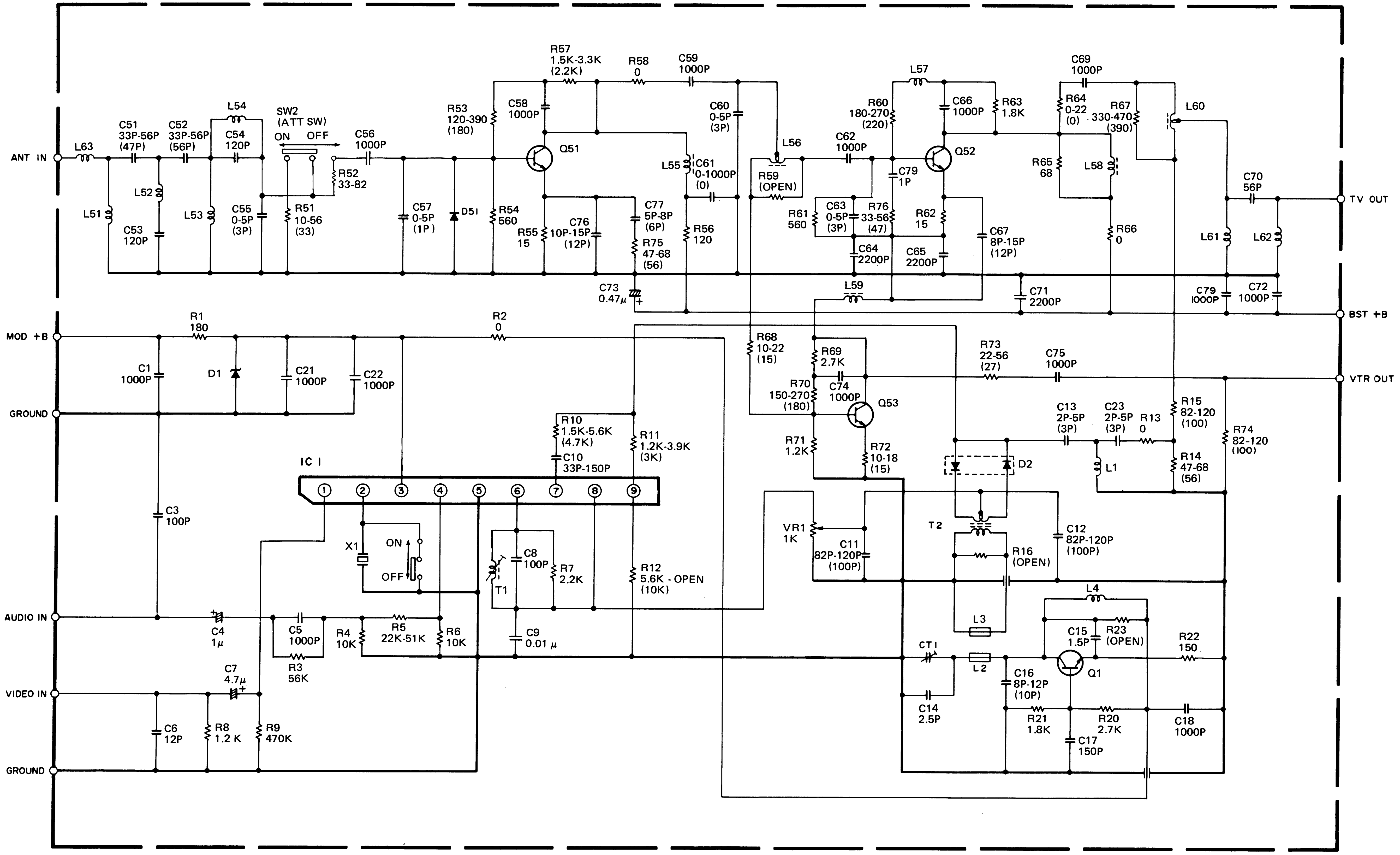
3.44 REMOTE CONTROL SCHEMATIC DIAGRAM

Notes: 1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


REMOCON
LCD
SEG 0 … SEG 31
COM 0, COM 1, COM 2
IC1
M50565-020FP
C2, C3 100P
C2
C3
C4 1000P
X1 CSB455EBIT
R10 5.6K
TP10
TP5
D19 MA151NA
D20 MA151A
S129 ESD1131230
MA151WX × 8
D3 D4 D5 D6 D7 D8 D9 D10
D11 D12 D13 D14 D15 D16 D17 D18
D25
D26
TP8
E0 E1 E2 E3 G0 G1 G2 G3 F0 F1 F2 F3 F4 F5 F6 F7
VDD
R3 47
TP7
TP6
TP4
R1 0.47
R2 0.47
C1 100/6.3
TP1
TP2
Q1
D1
D2
3VDC
C5 0.001
R4 100
R6 47K
R7 47K
R8 47K
TP3
TP9
Q1 2SD1055R
D1, D2 SE303A(Y)
VSS
TEST
AC
OSC
VLC 1 2 3
A B C D E F G H
1 2 3 4 5 6

126	MEMORY TRANSFER
125	MEMORY CANCEL
124	MEMORY PROGRAM
123	REC
112	TV VOL. –
111	TV VOL. +
106	TV CH+
105	TV CH–
104	OPERATE (TV)
100	MONITOR TV/VIDEO
88	INTRO
82	INDEX
60	GO TO
57	DISPLAY
56	PROGRAM
55	CANCEL
54	TIMER
53	VPS/CH
52	O/AUX
50	SP/LP
42	9/REPEAT
41	8/DAILY
40	
39	
38	
37	
36	
35	
34	
26	TV PROG. +
25	TV PROG. –
24	AUDIO MONITOR
22	SLOW–
21	SLOW+
20	MENU/TEXT
14	PAUSE/STILL
13	PLAY/x2
12	OPERATE (VIDEO)
8	REW
7	FF
4	STOP
No	KEY NAME

3.45 RF CONVERTER SCHEMATIC DIAGRAM



ANT IN
L63
L51
C51
33P-56P
(47P)
C52
33P-56P
(56P)
L52
C53
120P
L53
L54
C54
120P
C55
0-5P
(3P)
SW2
(ATT SW)
ON OFF
R51
10-56
(33)
R52
33-82
C56
1000P
C57
0-5P
(1P)
D51
R53
120-390
(180)
C58
1000P
Q51
R54
560
R55
15
C76
10P-15P
(12P)
R57
1.5K-3.3K
(2.2K)
R58
0
C59
1000P
C60
0-5P
(3P)
L55
C61
0-1000P
(0)
C77
5P-8P
(6P)
R75
47-68
(56)
R56
120
C73
0.47μ
L56
R59
(OPEN)
R60
180-270
(220)
C62
1000P
R61
560
C63
0-5P
(3P)
R76
33-56
(47)
C64
2200P
C79
1P
L57
C66
1000P
R63
1.8K
Q52
R62
15
C65
2200P
C67
8P-15P
(12P)
L59
C69
1000P
R64
0-22
(0)
R67
330-470
(390)
L60
R65
68
L58
R66
0
C71
2200P
C70
56P
TV OUT
L61
L62
C79
1000P
C72
1000P
BST +B
MOD +B
R1
180
R2
0
C1
1000P
D1
C21
1000P
C22
1000P
GROUND
R68
10-22
(15)
R69
2.7K
R70
150-270
(180)
C74
1000P
Q53
R71
1.2K
R72
10-18
(15)
R73
22-56
(27)
C75
1000P
VTR OUT
C13
2P-5P
(3P)
C23
2P-5P
(3P)
R13
0
R15
82-120
(100)
R74
82-120
(100)
D2
L1
R14
47-68
(56)
R10
1.5K-5.6K
(4.7K)
C10
33P-150P
R11
1.2K-3.9K
(3K)
IC 1
①
②
③
④
⑤
⑥
⑦
⑧
⑨
C3
100P
X1
ON
OFF
C8
100P
R7
2.2K
T1
R12
5.6K - OPEN
(10K)
VR1
1K
C11
82P-120P
(100P)
T2
R16
(OPEN)
C12
82P-120P
(100P)
L4
L3
AUDIO IN
C4
1μ
C5
1000P
R3
56K
R4
10K
R5
22K-51K
R6
10K
C9
0.01 μ
CT1
L2
C15
1.5P
R23
(OPEN)
Q1
R22
150
C16
8P-12P
(10P)
C14
2.5P
R21
1.8K
R20
2.7K
C17
150P
C18
1000P
VIDEO IN
C7
4.7μ
C6
12P
R8
1.2 K
R9
470K
GROUND
6
5
4
3
2
1
A
B
C
D
E
F
G
H

NOTES:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

SECTION 4
EXPLODED VIEWS AND PARTS LIST

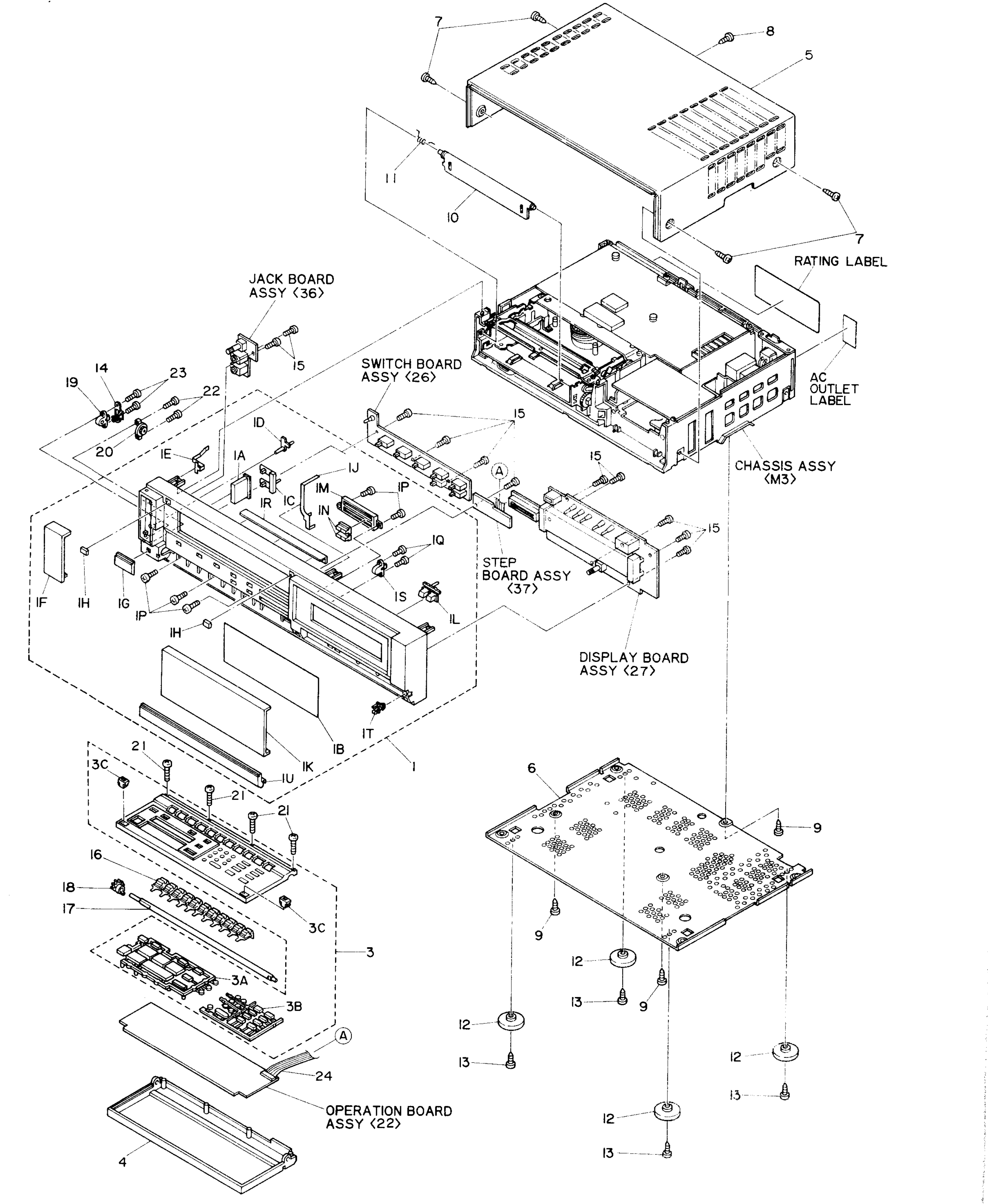
SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE :

[M] indicates mechanical symbol number.

4.1 CABINET ASSEMBLY <M2>


7
8
5
11
10
7
RATING LABEL
AC OUTLET LABEL
JACK BOARD ASSY <36>
15
14
19
23
22
20
SWITCH BOARD ASSY <26>
15
1D
1E
1A
1J
1C
1R
1M
1P
1N
1Q
Ⓐ
15
CHASSIS ASSY <M3>
15
STEP BOARD ASSY <37>
1S
1L
1F
1H
1G
1P
1H
DISPLAY BOARD ASSY <27>
1T
1B
1K
1U
1
21
3C
21
21
16
18
17
3C
3
3A
3B
Ⓐ
24
OPERATION BOARD ASSY <22>
4
6
9
9
12
13
9
12
13
12
13
12
13

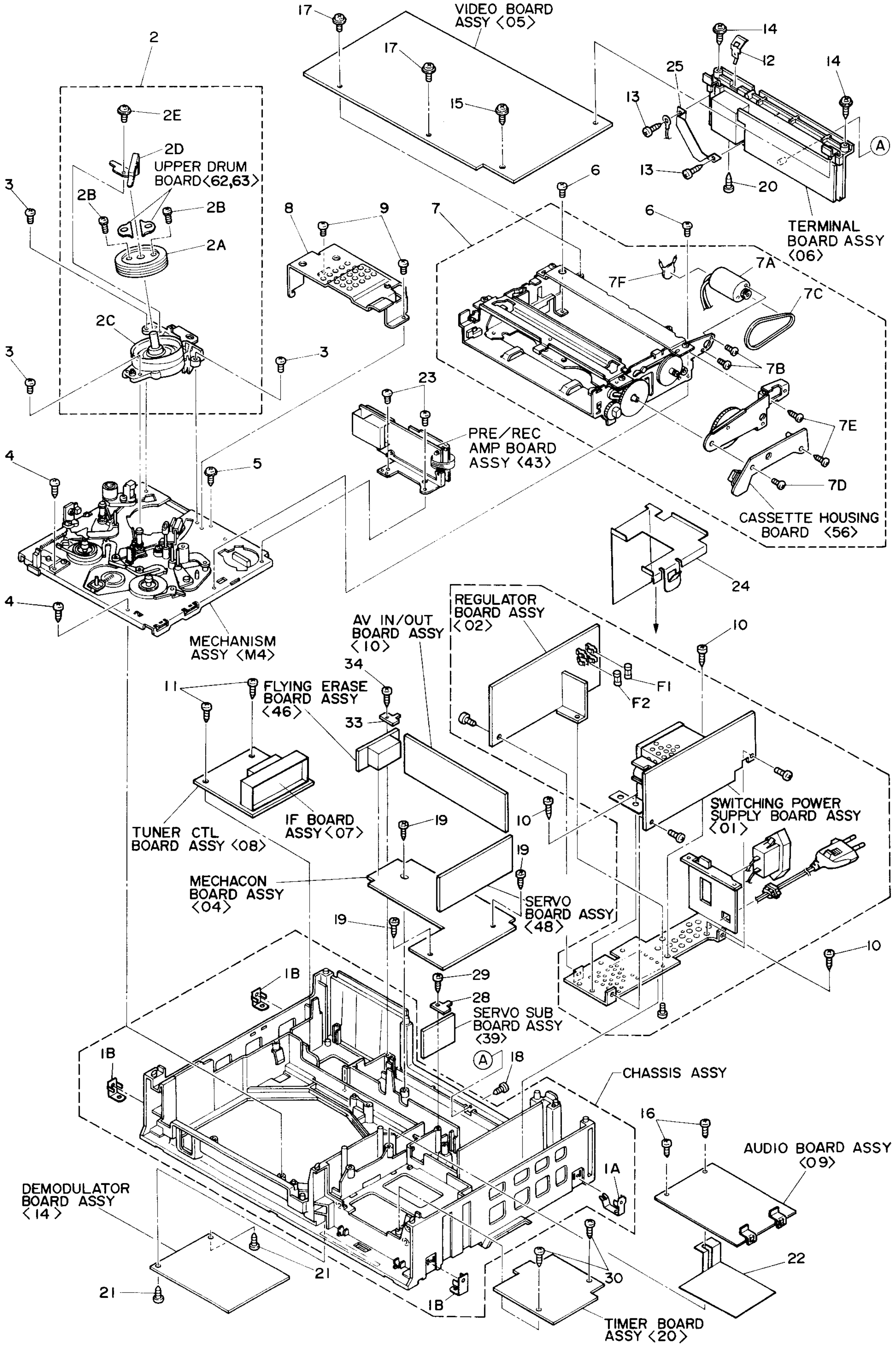
CABINET ASSEMBLY <M2>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ10668F-11	FRONT PANEL ASSY,E
		PQ10668D-10	FRONT PANEL ASSY, EG
	1A	PQ32347	BUTTON(POWER)
	1B	PQ32499-6	DISPLAY SHEET,E
		PQ32499-4	DISPLAY SHEET,EG
	1C	PQ43395	HINGE(POWER)
	1D	PQ43394	IND(POWER)
	1E	PQ43487	EARTH PLATE
	1F	PQ32351-4	COVER(JACK), EG
		PQ32351-5	COVER(JACK),E
	1G	PQ32348	COVER
	1H	PQ43363	PLATE(MAGNET),X2
	1J	PQ32395-1-2	EARTH PLATE
	1K	PQ32485-3	D.WINDOW,E
		PQ32485-2	D.WINDOW, EG
	1L	PQ43455	BUTTON(TR)
	1M	PQ32352	GUIDE(SLIDE)
	1N	PQ32353	KNOB(SLIDE),X2
	1P	SDSF2606Z	TAPPING SCREW, X5
	1Q	SDSF2608Z	TAPPING SCREW,X2
	1R	PQ32571	PLATE(FRONT)
	1S	PQ43467	HOLDER
	1T	PU60109	CATCHER
	1U	PQ32462E-2	DOOR ASSY,E
		PQ32462D-2	DOOR ASS'Y, EG
	3	PQ20710C	DOOR(U) ASS'Y,E
		PQ20710A-2	DOOR(U) ASS'Y, EG
	3A	PQ32534	BUTTON(1), EG
		PQ32534-2	BUTTON(1),E
	3B	PQ32518-3	BUTTON(2),E
		PQ32518-1-2	BUTTON(2), EG
	3C	PU59891-2	MAGNET ASS'Y,X2
	4	PQ20666F-5	DOOR(L) ASS'Y,E
		PQ20666D-4	DOOR(L) ASS'Y, EG
⚠	5	PQ10545-6	TOP COVER
⚠	6	PQ10579	BOTTOM COVER
	7	SDSA4014M	TAPPING SCREW,X4
	8	SDSF3010M	TAPPING SCREW
	9	SDSF3008Z	TAPPING SCREW,X3
	10	PQ31819-22	C.HOUSHING DOOR
	11	PQ42410-1-1	TORSION SPRING
	12	PQ43631A	FOOT ASS'Y,X4
	13	SDSF3012Z	TAPPING SCREW,X4
	14	PQ43704-1-1	SPRING
	15	SDSF2608Z	TAPPING SCREW,X11
	16	PQ32519	BUTTON(3)
	17	PQ32362-1-2	SHAFT
	18	PQ43470	GEAR
	19	PQ43467	HOLDER
	20	PU60527	DAMPER UNIT
	21	SPSF2008M	TAPPING SCREW,X4
	22	SDSF2010Z	TAPPING SCREW,X2
	23	SDSF2608Z	TAPPING SCREW,X2
	24	PQ32556	FPC

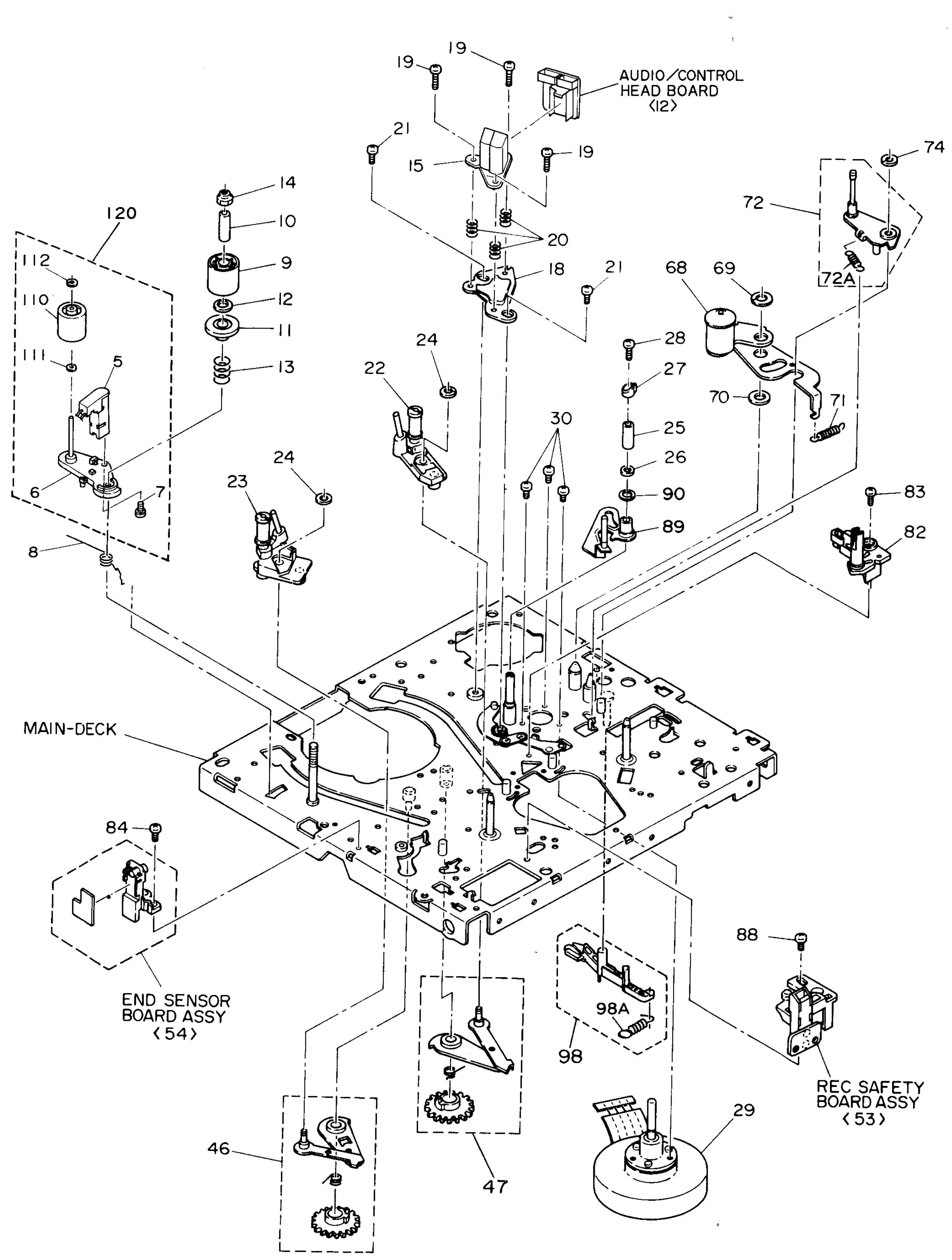
CHASSIS ASSEMBLY <M3>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1A	PQ43023-2	EARTH PLATE
	1B	PQ43011	EARTH PLATE, X3, EG
	2	PDV2146A	DRUM ASSY
	2A	PDM2119A	UPPER DRUM ASSY
	2B	PDM4165A	DRUM SCREW ASSY, X2
	2C	PDM2113C	LOWER DRUM MOTOR ASSY
	2D	PDM4015B	BRUSH ASSY
	2E	LPSP2606Z	SCREW
	3	SDSP2608Z	SCREW, X3, DRUM
	4	SDSA4014Z	TAPPING SCREW, X2, M.DECK
	5	PQ41396	SPECIAL SCREW, M.DECK
	6	SDST2605Z	TAPPING SCREW, X2, C.HOUSING
	7	PUS28277H	CASS.HOUSING ASSY
⚠	7A	PQ42385A	CASSETTE MOTOR ASSY
⚠		OR PQ42385B	CASSETTE MOTOR ASSY
	7B	SPSP2603Z	SCREW, X2
	7C	PQM30003-19	BELT(CASSETTE MOTOR)
	7D	SPSP2604Z	SCREW
	7E	SPST2605Z	TAPPING SCREW, X2
	7F	DV710SR223M16	VARISTOR
	8	PQ31171-5	DRUM SHIELD
	9	SDST2605Z	TAPPING SCREW, X2, D.SHIELD
	10	SDSA4012Z	TAPPING SCREW, X3, TRANS BKT
	11	SDSF3008Z	TAPPING SCREW, X2, TUNER BOARD
	12	PQ43012	EARTH PLATE, RF.CONV
	13	SDSF2608Z	TAPPING SCREW, X2, RF.CONV
	14	GPSF2610Z	TAPPING SCREW, X2, TERM.BOARD
	15	GPSF2610Z	TAPPING SCREW, VIDEO BOARD
	16	SDSF3008Z	TAPPING SCREW, X2, AUDIO BOARD
	17	GPST2608Z	SCREW, X2, VIDEO BOARD
	18	SDSF3010M	TAPPING SCREW, TERMINAL BOARD
	19	SDSF3008Z	TAPPING SCREW, X3, M CTL BOARD
	20	SDST2605Z	TAPPING SCREW, RF.CONV
	21	SDSF3008Z	TAPPING SCREW, X2, DEMOD BOARD
	22	PQ32255A	SHIELD PLATE ASSEMBLY
	23	SDST2605Z	TAPPING SCREW, X2, PRE/REC
	24	PQ32578	COVER(AC), SW.REG
	25	PQ43683	BRACKET(RF)
	28	PQ43714	BRACKET(FE), SERVO SUB
	29	SDSF3008Z	TAPPING SCREW, SERVO SUB
	30	SDSF3008Z	TAPPING SCREW, X2, TIMER
	33	PQ43714	BRACKET(FE), F.E BOARD
	34	SDSF3008Z	TAPPING SCREW, F.E BOARD

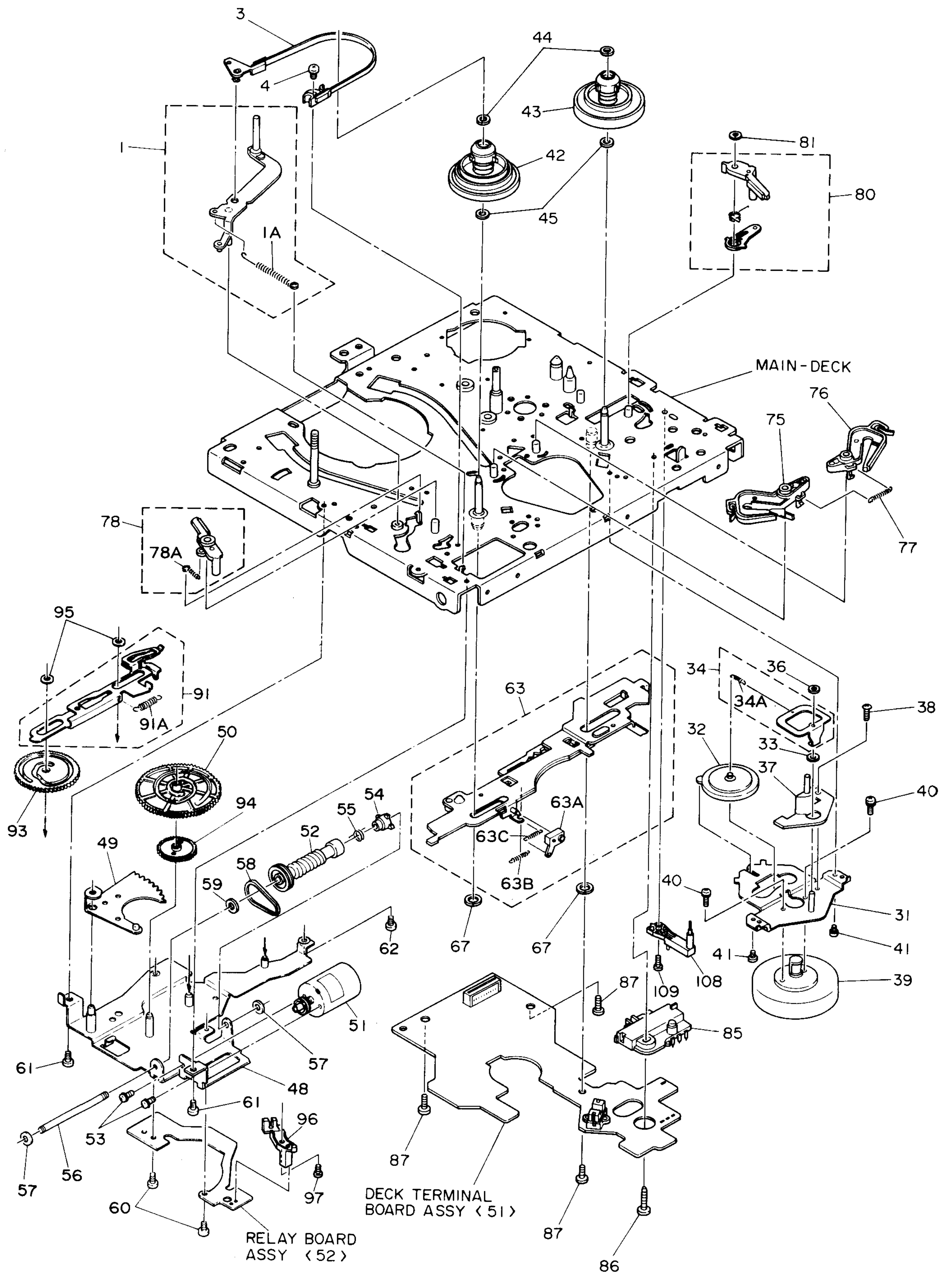
4.2 CHASSIS ASSEMBLY <M3>


VIDEO BOARD ASSY <05>
17
15
14
12
25
13
A
20
TERMINAL BOARD ASSY <06>
2
2E
2D
UPPER DRUM BOARD<62,63>
2B
2A
2C
3
8
9
7
6
7A
7F
7C
7B
7E
7D
CASSETTE HOUSING BOARD <56>
23
PRE/REC AMP BOARD ASSY <43>
4
5
24
MECHANISM ASSY <M4>
AV IN/OUT BOARD ASSY <10>
REGULATOR BOARD ASSY <02>
10
34
F1
F2
11
FLYING ERASE BOARD ASSY <46>
33
TUNER CTL BOARD ASSY <08>
IF BOARD ASSY <07>
19
SWITCHING POWER SUPPLY BOARD ASSY <01>
MECHACON BOARD ASSY <04>
SERVO BOARD ASSY <48>
1B
29
28
SERVO SUB BOARD ASSY <39>
18
CHASSIS ASSY
16
AUDIO BOARD ASSY <09>
1A
DEMODULATOR BOARD ASSY <14>
22
21
30
TIMER BOARD ASSY <20>

4.3 MECHANISM ASSEMBLY (1) <M4>


19
19
AUDIO/CONTROL HEAD BOARD <12>
21
19
15
14
10
120
9
112
12
110
11
111
13
5
20
18
21
68
69
72
74
72A
24
28
27
22
30
25
70
71
26
6
7
23
24
90
89
83
82
8
MAIN-DECK
84
END SENSOR BOARD ASSY <54>
88
98A
98
REC SAFETY BOARD ASSY <53>
29
46
47

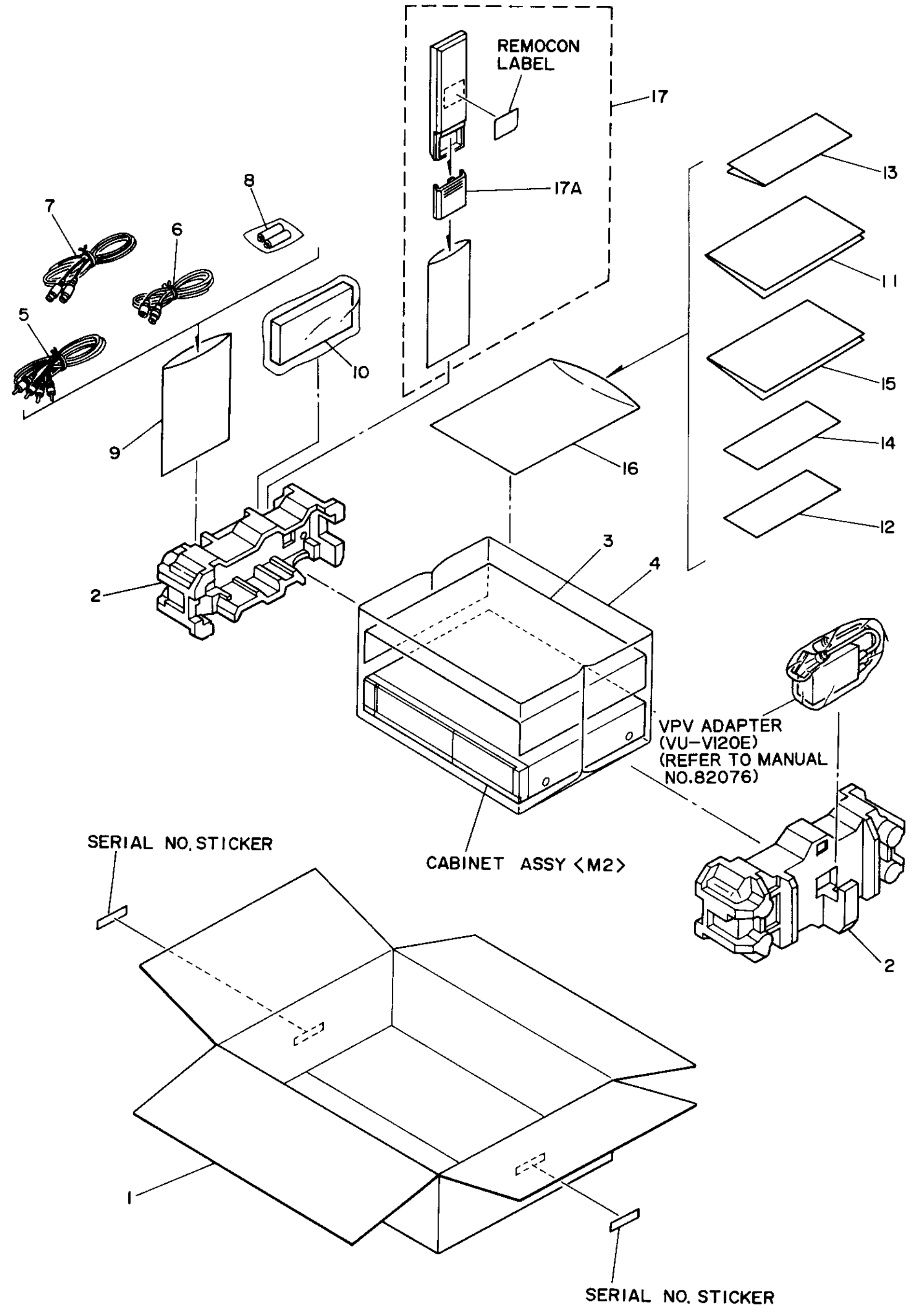
MECHANISM ASSEMBLY (2) <M4>


3
44
4
43
42
1
81
80
45
1A
MAIN-DECK
76
75
77
78
78A
95
91
91A
63
34
36
34A
38
32
33
37
50
40
93
94
55
54
63A
49
52
63C
63B
58
59
62
67
67
40
31
41
41
39
108
87
109
61
51
57
85
48
61
96
53
87
56
57
60
97
DECK TERMINAL BOARD ASSY <51>
87
RELAY BOARD ASSY <52>
86

MECHANISM ASSEMBLY <M4>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ43710A	TENSION ARM ASSEMBLY
	1A	PQ41952-5	SPRING
	3	PQ41948A	TENSION BAND ASSY
	4	SDST2606Z	TAPPING SCREW
	5	PU60646	FULL ERASE HEAD
	6	PQ43299A	FE HEAD SUB ASSEMBLY
	7	LPSP2004Z	SCREW
	8	PQ41954-1-1	TORSION SPRING
	9	PQ41955	IMPEDANCE ROLLER
	10	PQ41956	COLLAR
	11	PQ41957	LOWER FLANGE
		OR PQ42958	LOWER FLANGE
	12	PQM30018-39	SPACER
		OR PQM30018-50	SPACER
	13	PQM30002-124	COMPRESSION SPRING
	14	PQ40353	NYLON NUT
	15	PU60560-2	AUDIO/CONTROL HEAD
	18	PQ42984-2	HEAD BASE
	19	SPSP2608Z	SCREW, X3
	20	PU30080-49	SPRING, X3
	21	SDSP2606Z	SCREW,X2
	22	PU60557	POLE BASE ASSY(TAKE-UP)
		OR PU59994	POLE BASE ASSY(TAKE-UP)
	23	PU60556	POLE BASE ASSY(SUPPLY)
		OR PU59993	POLE BASE ASSY(SUPPLY)
	24	PQM30017-5	SLIT WASHER,X2
	25	PU53629-3	TAPE GUIDE
	26	PQ40268-2	GUIDE FLANGE
	27	PQ42999-2-1	G.POLE CAP
	28	SDSP2006Z	SCREW
⚠	29	PU60201V	CAPSTAN MOTOR
	30	SPSP2605N	SCREW,X3
	31	PQ41974A-3	REEL MOTOR BRACKET ASSY
	32	PU58645-1-4	IDLER ARM
	33	Q03093-834	WASHER
	34	PQ41976A-1	SP ARM ASSY
	34A	PQ42212-1-4	SPRING
	36	PQM30017-22	SLIT WASHER
	37	PQ41978	HOLDER
	38	SPST2606Z	SCREW
⚠	39	PU59926V	REEL MOTOR
	40	LPSP2604Z	SCREW,X2
	41	SPST2606Z	SCREW,X2
	42	PU59250-1-2	REEL DISK (SUPPLY)
	43	PU58638-1-2	REEL DISK (TAKE-UP)
	44	PQM30017-5	SLIT WASHER,X2
	45	Q03093-828	WASHER,X2
	46	PQ41979A-5	LOADING ARM ASSY (SUPPLY)
	47	PQ41985B-3	LOADING ARM ASSY (TAKE-UP)
	48	PQ42973A	CAM BRACKET.ASSY
	49	PQ41994A-3	ARM GEAR ASSY
	50	PQ20577	CONTROL CAM
	51	PQ41996B	MODE MOTOR ASSY
		OR PQ41996C	MODE MOTOR ASSY
	52	PQ41998A	WORM ASSY
	53	LPSP2604Z	SCREW,X2
	54	PQ42001	WINDMILL
	55	PQ42002	CLUTCH SPRING
	56	PQ42003	WORM SHAFT
	57	PQM30017-5	SLIT WASHER,X2
	58	PQM30003-20	BELT(MODE MOTOR)
	59	PQM30018-22	SPACER
	60	SPST2606Z	SCREW,X2
	61	SPST2606Z	SCREW,X2
	62	SPSP2603Z	SCREW
	63	PQ42038C	PLATE ASSY
	63A	PQ31044-1-2	LOCK LEVER
	63B	PQM30001-223	TENSION SPRING
	63C	PQM30001-211	TENSION SPRING
	67	PQM30017-28	SLIT WASHER, X2
	68	PQ42006B	PINCH ROLLER ARM ASSY
	69	PQM30017-28	SLIT WASHER
	70	Q03093-833	WASHER
	71	PQM30001-229	TENSION SPRING
	72	PQ42013B-4	GUIDE ARM ASSY
	72A	PQ42029	SPRING
	74	PQM30017-6	SLIT WASHER
	75	PQ42019B-6	MAIN BRAKE ASSY (SUPPLY)
	76	PQ42020B	MAIN BRAKE ASSY (TAKE-UP)
	77	PQM30001-216	TENSION SPRING
	78	PQ42021A-3	SUB BRAKE ASSY (SUPPLY)
	78A	PQ42023-1-2	TENSION SPRING
	80	PQ42037A-2	SUB BRAKE ASSY (TAKE-UP)
	81	PQM30017-6	SLIT WASHER
	82	PU59925-1-1	LED HOLDER
	83	SPST2606Z	SCREW
	84	SPST2606Z	SCREW
	85	PU60444	SLIDE SWITCH
	86	SDSP2610Z	SCREW
	87	SDSP2606Z	SCREW,X3
	88	SDST2606Z	TAPPING SCREW
	89	PQ42979A-2	HALF LOADING ARM ASSY
	90	PQM30017-29	SLIT WASHER
	91	PQ42974A	SLIDE CAM PLATE ASSEMBLY
	91A	PQM30001-224	SPRING
	93	PQ31677	HALF LOADING CAM
	94	PQ42963	SECOND GEAR
	95	PQM30017-24	SLIT WASHER,X2
	96	PU59251-1-2	R.SENSOR(S)
	97	SPSP2603Z	SCREW
	98	PQ43295A-1	MOTOR BRAKE ASSY
	98A	PQ43296	SPRING
	108	PU59919-1-1	CASSETTE SWITCH
	109	SDST2608Z	SCREW
	110	PQ43298A	ROLLER ASSY
	111	Q03093-829	WASHER
	112	PQM30017	SLIT WASHER
	120	PQ43330B	FE HEAD ASSY

4.4 PACKING ASSEMBLY <M1>


REMOCON LABEL
17
17A
13
8
7
6
11
5
10
15
14
9
16
12
3
4
2
VPV ADAPTER (VU-V120E) (REFER TO MANUAL NO.82076)
SERIAL NO.STICKER
CABINET ASSY <M2>
2
1
SERIAL NO. STICKER

```
*****************************************************************
           ***************************************************
           *          PACKING ASSEMBLY <M1>                  *
           ***************************************************
```

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	1	PQ32582	PACKING CASE, EG
		PQ32582-2-1	PACKING CASE, E
	2	PQ32583A	CUSHION ASSY
	3	PU57777	WADDING PAPER
	4	PQM30021-70	POLY BAG
	5	PU56142-3	PIN CORD ASSY
	6	PU59168-3	RF CABLE
		OR PU59167-3	RF CABLE
	7	PU60111	DIN CABLE
	8	UM-3DJ2P	BATTERY, 2CELLS
	9	QPGA020-02003	POLY BAG
	10	SE-180P	CESSETTE TAPE
⚠	11	PU30425-1005	INSTRUCTIONS, E
⚠		PU30425-999	INSTRUCTIONS, EG
	12	TCN-3379	TAPE CATALOG, EG
	13	BT-20069A	WARRANTY CARD, EG
⚠	14	-	DBP INF SHEET, EG
⚠	15	PU30425-1019	INSTRUCTIONS, EG
	16	QPGA025-03505	POLY BAG
⚠	17	PQ10543BM	REMOTE CONTROLLER, E
⚠		PQ10543BJ-33	REMOTE CONTROLLER,EG
	17A	PQ31449	BATTERY CAP

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

* SWITCHING POWER SUPPLY BOARD ASSEMBLY <01><02> *

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10166A-02	SWITCH REG. BOARD ASSEMBLY,EG
		PB10166C-01	SWITCH REG. BOARD ASSEMBLY,E
⚠	POC1	QMP3980-200	POWER CORD,E
⚠		QMP4019-200	POWER CORD,EG
⚠	AO1	QMC9021-001	AC OUTLET
⚠	BKT1	PQ20531-1-2	TRANS BRACKET
⚠	HD1	QHS3771-108	STRAIN RELIEF
⚠	HS2	PQ43230	HEAT SINK(2)
	SCW1	DPSP3012Z	SCREW, X2
		DPSP3006Z	SCREW, X2, D11,D12
	SCW2	SDST3006Z	SCREW, X3
	SCW3	SBSB3008Z	SCREW, X3
	SCW5	SBSB3006Z	SCREW, X2, IC3,IC101
	SLD1	PQ32071	SHILD CASE(2)
⚠	SPC1	PQ43773	SHEET(AC)
⚠	F1	QMF51E2-1R25	FUSE
⚠	F2	QMF51E2-2R0	FUSE

– SWITCHING P.S BOARD ASSEMBLY <01> –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PB10166C1-01	SWITCHING P.S BOARD ASSY, E
		PB10166A1-02	SWITCHING P.S BOARD ASSY.EG
	IC1	STR-D1706	IC
	D1	10E6-F2	DIODE
	D2	10E6-F2	DIODE
	D3	10E6-F2	DIODE
	D4	10E6-F2	DIODE
	D5	RU1A	FR DIODE
	D6	RU1A	FR DIODE
	D7	AU01Z	FR DIODE
	OR	ERA48-02-T	FR DIODE
	D8	AU01Z	FR DIODE
	OR	ERA48-02-T	FR DIODE
⚠	D9	AU01Z	FR DIODE
⚠	D10	AU01Z	FR DIODE
	D11	F6P20F	FR DIODE
	OR	FML-12S	FR DIODE
	D12	F5KQ40B	BARRIER DIODE
	OR	FMB-24	BARRIER DIODE
	D13	AU01Z	FR DIODE
	OR	ERA48-02-T	FR DIODE
	D14	AU01Z	FR DIODE
	OR	ERA48-02-T	FR DIODE
	D15	RD16ES-T1B2	ZENER DIODE
	D28	AU01Z	FR DIODE
	R1	QRZ0078-2R2	W.W.RESISTOR
	R2	QRD181J-334	RESISTOR
	R3	QRD181J-334	RESISTOR
	R4	QRG029J-104	OMF RESISTOR
	R5	QRD161J-104	RESISTOR
	R6	QRG029J-201	OMF RESISTOR
	R7	QRZ0078-R39	WW RESISTOR
	R9	QVZ3507-101	V RESISTOR,SEMIREG 15V ADJ
	R11	QRD161J-333	RESISTOR
⚠	C1	QFZ9022-473	MM CAPACITOR,E
⚠		QFZ9022-683	MM CAPACITOR,EG
⚠	C2	QFZ9022-223	MM CAPACITOR,E
⚠	C7	QCZ9016-222M	CAPACITOR
⚠	OR	QCZ9048-222	CAPACITOR
⚠	C8	QCZ9016-222M	CAPACITOR
⚠	OR	QCZ9048-222	CAPACITOR
	C9	QED61HM-226	E CAPACITOR
	C10	QEZ0111-107	E CAPACITOR
	C11	QCY53AK-472	CAPACITOR
	C12	QCY43AK-121	CAPACITOR
	C13	QFL41HJ-222	M CAPACITOR
	C14	QFV41HJ-474	M CAPACITOR
	C15	QEZ0108-187Z	E CAPACITOR
⚠	C17	QCZ9016-102K	CAPACITOR,EG
⚠	OR	QCZ9048-102	CAPACITOR,EG
⚠	C18	QCZ9016-102K	CAPACITOR,EG
⚠	OR	QCZ9048-102	CAPACITOR,EG
⚠	C19	QCZ9016-102K	CAPACITOR,E
⚠	OR	QCZ9048-102	CAPACITOR,E
⚠	C20	QCZ9016-102K	CAPACITOR,E
⚠	OR	QCZ9048-102	CAPACITOR,E
	C31	QEZ0125-228	E CAPACITOR
	C32	QEZ0106-338	E CAPACITOR
	C33	QEZ0104-476Z	E CAPACITOR
	C34	QEZ0107-476Z	E CAPACITOR
	C35	QETB1EM-108	E CAPACITOR
	C36	QETB1EM-108	E CAPACITOR
	C37	QETB1AM-108	E CAPACITOR
	C38	QETC1JM-226	E CAPACITOR
	C39	QETC1HM-226	E CAPACITOR
	C40	QFL41HJ-102	M CAPACITOR
	C41	QFL41HJ-102	M CAPACITOR
	L11	PU56183-330	CHOKE COIL
	L12	PU56183-330	CHOKE COIL
	L13	PU56183-330	CHOKE COIL
	L14	PU48530-101K	PEAKING COIL
	L15	PU48530-101K	PEAKING COIL
	L16	PU48530-8R2K	PEAKING COIL
	L17	PU48530-8R2K	PEAKING COIL
⚠	T1	PU60683	SW.TRANS
⚠	HS1	PQ43231-1-1	HEAT SINK(3), FOR D11,D12
	HS2	PU60798	HEAT SINK
⚠	LF2	PU60347	LINE FILTER
	SLD1	PQ32558	SHILD CASE (1)
	CN1	PU58844-9	CAP HOUSING
	CN2	PU58844-3	CAP HOUSING

-REGULATOR BOARD ASSEMBLY<02>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PB10166C2-01	REGULATOR BOARD ASSEMBLY,E
		PB10166A2-02	REGULATOR BOARD ASSEMBLY,EG
	IC2	BA10324	IC

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC3	MC7805ACT	IC
	IC101	M54647L	IC
	Q11	2SD1764	TRANSISTOR
		OR 2SD1796	TRANSISTOR
	Q12	2SC1740S	TRANSISTOR
	Q13	2SD1764	TRANSISTOR
		OR 2SD1796	TRANSISTOR
	Q14	2SD1764	TRANSISTOR
		OR 2SD1796	TRANSISTOR
	Q15	2SD1764	TRANSISTOR
		OR 2SD1796	TRANSISTOR
	Q16	2SB1186(DE)	TRANSISTOR
⚠	Q17	2SA720	TRANSISTOR
	Q18	DTA114ES	TRANSISTOR
	Q19	DTB114ES	TRANSISTOR
	D16	RD6.2ES-T1B3	ZENER DIODE
	D17	RD5.1ES-T1B2	ZENER DIODE
	D18	1SS133	DIODE
	D19	HZ6B1TE	DIODE
		OR HZ6B1TJ	DIODE
	D20	RD13ES-T1B3	DIODE
	D21	HZS33EB1	ZENER DIODE
	D22	1SS133	DIODE
		OR MA165	DIODE
	D23	1SS133	DIODE
		OR MA165	DIODE
	D24	1SS133	DIODE
		OR MA165	DIODE
	D25	1SS133	DIODE
		OR MA165	DIODE
	D26	1SS133	DIODE
		OR MA165	DIODE
	D27	RD20ES-T1B2	ZENER DIODE
	R14	QRD161J-222	RESISTOR
	R15	QRD161J-362	RESISTOR
	R16	QRD161J-472	RESISTOR
	R17	QRD161J-102	RESISTOR
	R18	QRD161J-622	RESISTOR
	R19	QRD161J-472	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-153	RESISTOR
	R22	QRD161J-472	RESISTOR
	R23	QRD161J-102	RESISTOR
	R24	QRD161J-102	RESISTOR
	R25	QRD161J-153	RESISTOR
	R26	QVZ3244-222	V RESISTOR, SWD 5V ADJ
	R27	QRD161J-223	RESISTOR
	R28	QRD161J-222	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-392	RESISTOR
	R31	QRD161J-102	RESISTOR
	R32	QRD161J-472	RESISTOR
	R33	QRD161J-331	RESISTOR
	R34	QRD161J-272	RESISTOR
⚠	R35	QRZ0077-220X	FUSIBLE RESISTOR
⚠	R36	QRZ0077-220X	FUSIBLE RESISTOR
	R43	QRD161J-392	RESISTOR
	R44	QRD181J-1R0	RESISTOR
	R45	QRD181J-1R0	RESISTOR
	R46	QRD181J-1R0	RESISTOR
	R47	QRD181J-1R0	RESISTOR
	R48	QRD181J-1R0	RESISTOR
	R49	QRD181J-1R0	RESISTOR
	R50	QRD181J-1R0	RESISTOR
	R51	QRD181J-1R0	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R52	QRD181J-562	RESISTOR
	R53	QRD181J-562	RESISTOR
	C43	QFN31HJ-103	M CAPACITOR
	C44	QETC1CM-107	E CAPACITOR
	C45	QETC1HM-106	E CAPACITOR
	C46	QFN31HJ-103	M CAPACITOR
	C47	QFN31HJ-103	M CAPACITOR
	C48	QETC1CM-107	E CAPACITOR
	C49	QFN31HJ-103	M CAPACITOR
	C50	QFN31HJ-103	M CAPACITOR
	C51	QETC1AM-107	E CAPACITOR
	C52	QETC1HM-476	E CAPACITOR
	C53	QETC1CM-107	E CAPACITOR
	C54	QETC1HM-106	E CAPACITOR
	C55	QFN31HJ-103	M CAPACITOR
	C56	QFN31HJ-103	M CAPACITOR
	C57	QETC1AM-107	E CAPACITOR
	C58	QETC1HM-226	E CAPACITOR
	C59	QETC1HM-226	E CAPACITOR
	C60	QETC1HM-226	E CAPACITOR
	C101	QETC1EM-476	E CAPACITOR
	C102	QETC1HM-105	E CAPACITOR
	L18	PU53618-101J	COIL
⚠	RY1	PU59457	RELAY
⚠	HD1	PU57505	FUSE CLIP,X4, FOR F1,F2
	HS1	PQ43701-1-1	HEAT SINK
⚠	LF1	PU60020	LINE FILTER,EG
⚠	TAB1	A74316	TAB
	TP1	PU55774	TEST PIN, X4,(1-3,GND)
	CN4	PU58844-102	CAP HOUSING
	CN5	PU58844-102R	CAP HOUSING
	CN6	PU58844-107	CAP HOUSING
	CN7	PU59555-105	CAP HOUSING
	CN8	PU59555-108	CAP HOUSING
	CN9	PU58844-103R	CAP HOUSING
	CN10	PU58844-103R	CAP HOUSING
	CN11	PU58844-103Y	CAP HOUSING
	CN12	PU59555-108	CAP HOUSING
⚠	CP1	ICP-F25	CIRCUIT PROTECTOR
⚠	CP2	ICP-F25	CIRCUIT PROTECTOR
⚠	CP3	ICP-F20	CIRCUIT PROTECTOR
⚠	CP101	ICP-F25	CIRCUIT PROTECTOR

****

MECHACON BOARD ASSEMBLY <04>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10151D	MECHACON BOARD ASSY
	IC1	M50938-625SP	IC
		OR M50938E-812SP	IC
	IC2	TA8405S	IC
	IC4	BA6222	IC
	IC5	M50255P	IC
	Q1	2SD1468S(RS)	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	D1	HZS4.3EB2	ZENER DIODE
	D2	MA165	DIODE
		OR 1SS133	DIODE
	D3	MA165	DIODE
		OR 1SS133	DIODE
	D4	MA165	DIODE
		OR 1SS133	DIODE
	D5	HZS7.5EB2	ZENER DIODE
	D6	MA165	DIODE
		OR 1SS133	DIODE
	D7	MA165	DIODE
		OR 1SS133	DIODE
	D8	MA165	DIODE
		OR 1SS133	DIODE
	D9	MA165	DIODE
		OR 1SS133	DIODE
	R1	QRD161J-152	RESISTOR
	R2	QRD161J-332	RESISTOR
	R3	QRD161J-122	RESISTOR
	R4	QRD161J-823	RESISTOR
	R5	QRD161J-471	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-102	RESISTOR
	R8	QRD161J-102	RESISTOR
	R9	QRD161J-103	RESISTOR
	R10	QRD161J-472	RESISTOR
	R11	QRD161J-472	RESISTOR
	R12	QRD161J-472	RESISTOR
	R13	QRD161J-472	RESISTOR
	R14	QRD161J-472	RESISTOR
	R15	QRD161J-472	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-103	RESISTOR
	R18	QRD161J-103	RESISTOR
	R19	QRD161J-333	RESISTOR
	R20	QRD161J-472	RESISTOR
	R21	QRD161J-472	RESISTOR
	R22	QRD161J-472	RESISTOR
	R23	QRD161J-472	RESISTOR
	R24	QRD161J-472	RESISTOR
	R25	QRD161J-472	RESISTOR
	R26	QRD161J-472	RESISTOR
	R27	QRD161J-472	RESISTOR
	R28	QRD161J-472	RESISTOR
	R29	QRD161J-472	RESISTOR
	R30	QRD161J-124	RESISTOR
	R31	QRD161J-124	RESISTOR
	R32	QRD161J-333	RESISTOR
	R33	QRD161J-821	RESISTOR
	R34	QRD161J-331	RESISTOR
	R35	QRD161J-822	RESISTOR
	R36	QRD161J-103	RESISTOR
	R37	QRD161J-472	RESISTOR
	R38	QRD161J-472	RESISTOR
	R39	QRD161J-333	RESISTOR
	R40	QRD161J-333	RESISTOR
	R41	QRD161J-105	RESISTOR
	R42	QRD161J-561	RESISTOR
	R43	QRD161J-561	RESISTOR
	RA1	QRB035J-103C	RESISTOR ARRAY
	RA2	QRB045J-472C	RESISTOR ARRAY
	RA3	QRB045J-103C	RESISTOR ARRAY
	C1	QCFB1EZ-223	CAPACITOR
	C2	QETC1EM-335	E CAPACITOR
	C5	QETC1EM-106	E CAPACITOR
	C6	QETC1EM-106	E CAPACITOR
	C7	QCFB1EZ-223	CAPACITOR
	C8	QETC1EM-475	E CAPACITOR
	C9	QCFB1EZ-223	CAPACITOR
	C10	QCC11CK-104	CAPACITOR
	L1	PU53223-R22G	PEAKING COIL
	CF1	PU60414	CERAMIC FILTER
	WR1	PW30112-L0AF6AH	PARALLEL WIRE
	CN1	PU59934-17	WIRE HOLDER
	CN2	PU58844-6	CAP HOUSING
	CN4	PU58930-14	CAP HOUSING
	CN5	PU58930-12	CAP HOUSING
	CN6	PU59555-10	CAP HOUSING
	CN9	PU59555-8	CAP HOUSING
	CN12	PU59555-6	CAP HOUSING
	CN13	PU58844-3	CAP HOUSING
	CN14	PU58928-18	CAP HOUSING
	CN15	PU58928-13	CAP HOUSING
	CN16	PU58928-16	CAP HOUSING
	CN17	PU58928-15	CAP HOUSING
	CN18	PU59555-8	CAP HOUSING

* * *

VIDEO BOARD ASSEMBLY <05>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10154B	VIDEO BOARD ASSY
	CL1	PU56729-2	WIRE CLAMP
	CL2	PU55379	MINI CLAMP
	HN1	PU58018-1-2	PWB HINGE, X2
	SPC1	PU60010	SPACER, X2
	SPC2	PQM30029-54	SPACER, X2
	CN1	PU58844-2	CAP HOUSING
	CN2	PU58844-6	CAP HOUSING
	CN3	PU58844-3	CAP HOUSING
	CN4	PU59555-10	CAP HOUSING
	CN5	PU58844-8	CAP HOUSING
	CN6	PU58844-4	CAP HOUSING
	CN7	PU58844-5	CAP HOUSING
	CN8	PU58844-5	CAP HOUSING
	CN9	PU58844-6	CAP HOUSING
	CN10	PU58844-4	CAP HOUSING
	CN12	PU59555-5	CAP HOUSING

-Y SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC1	PB20291A	Y MODULE BOARD ASSY
	IC2	NJM2234D	IC
	IC3	M51288SP	IC
	IC4	HA118070	IC
	IC5	NJM2233AD	IC
	IC6	PB20290A-02	JOG MODULE BOARD ASSY
	IC7	M52055P	IC
	IC8	NJM2233AD	IC
	IC9	PB20285A	Y MODULE BOARD ASSY
	IC10	PB20298A	Y MODULE BOARD ASSY
	IC11	PB20286A-01	YNR MODULE BOARD ASSY
	IC12	VC2063S	IC
	IC13	TC74HC04AP	IC
	IC14	AN6041	IC

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC15	BA7021	IC
	IC16	BU4066B	IC
	Q1	2SC1740S(QRS)	TRANSISTOR
	Q2	DTC124ES	TRANSISTOR
	Q3	DTC124ES	TRANSISTOR
	Q4	2SC1740S(QRS)	TRANSISTOR
	Q5	2SC1740S(QRS)	TRANSISTOR
	Q6	DTC124ES	TRANSISTOR
	Q7	DTC124ES	TRANSISTOR
	Q8	2SA933S	TRANSISTOR
	Q9	2SA933S	TRANSISTOR
	Q10	2SC1740S(QRS)	TRANSISTOR
	Q11	2SA933S	TRANSISTOR
	Q12	2SC1740S(QRS)	TRANSISTOR
	Q13	2SC1740S(QRS)	TRANSISTOR
	Q14	2SA933S	TRANSISTOR
	Q15	2SA933S	TRANSISTOR
	Q16	2SA933S	TRANSISTOR
	Q17	DTC124ES	TRANSISTOR
	Q18	2SK381(C)	FE TRANSISTOR
	Q19	2SA933S	TRANSISTOR
	Q20	2SC1740S(QRS)	TRANSISTOR
	Q21	2SC1740S(QRS)	TRANSISTOR
	Q22	DTC144ES	TRANSISTOR
	Q23	2SA933S	TRANSISTOR
	Q24	2SA933S	TRANSISTOR
	Q25	2SA933S	TRANSISTOR
	Q26	2SC1740S(QRS)	TRANSISTOR
	Q27	DTC124ES	TRANSISTOR
	Q28	DTC124ES	TRANSISTOR
	Q29	DTA124ES	TRANSISTOR
	Q30	2SC1740S(QRS)	TRANSISTOR
	Q31	2SC1740S(QRS)	TRANSISTOR
	Q32	DTA124ES	TRANSISTOR
	Q33	2SA933S	TRANSISTOR
	Q34	2SC1740S(RS)	TRANSISTOR
	Q35	2SB851Q,R	TRANSISTOR
	Q36	DTA124ES	TRANSISTOR
	Q37	DTA124ES	TRANSISTOR
	Q38	DTC124ES	TRANSISTOR
	Q39	2SC3313CTA	TRANSISTOR
	Q40	2SC3313CTA	TRANSISTOR
	Q41	2SC1740S(QRS)	TRANSISTOR
	Q42	2SC2647C	TRANSISTOR
	Q43	2SC2647C	TRANSISTOR
	Q45	2SC1740S(QRS)	TRANSISTOR
	Q46	2SA933S	TRANSISTOR
	Q47	2SC1740S(QRS)	TRANSISTOR
	Q48	2SC1740S(QRS)	TRANSISTOR
	Q49	2SA933S	TRANSISTOR
	Q50	2SA933S	TRANSISTOR
	Q51	2SA933S	TRANSISTOR
	Q52	2SC1740S(QRS)	TRANSISTOR
	Q53	DTC124ES	TRANSISTOR
	Q54	DTC144ES	TRANSISTOR
	Q55	2SA933S(QRS)	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	D2	1SS133	DIODE
		OR MA165	DIODE
	D3	1SS133	DIODE
		OR MA165	DIODE
	D4	1SS133	DIODE
		OR MA165	DIODE
	D5	1SS133	DIODE
		OR MA165	DIODE
	D6	1SS133	DIODE
		OR MA165	DIODE
	D7	1SS133	DIODE
		OR MA165	DIODE
	D8	1SS133	DIODE
		OR MA165	DIODE
	D10	1SS133	DIODE
		OR MA165	DIODE
	D11	1SS133	DIODE
		OR MA165	DIODE
	D12	1SS133	DIODE
		OR MA165	DIODE
	D13	1SS133	DIODE
		OR MA165	DIODE
	D16	1SS133	DIODE
		OR MA165	DIODE
	D17	1SS133	DIODE
		OR MA165	DIODE
	D18	1SS133	DIODE
	D20	0A90UF	DIODE
	D21	0A90UF	DIODE
	D22	1SS133	DIODE
		OR MA165	DIODE
	D23	1SS133	DIODE
		OR MA165	DIODE
	D24	1SS133	DIODE
	D26	1SS133	DIODE
		OR MA165	DIODE
	D27	1SS133	DIODE
		OR MA165	DIODE
	D28	1SS133	DIODE
		OR MA165	DIODE
	D29	1SS133	DIODE
		OR MA165	DIODE
	D31	1SS133	DIODE
		OR MA165	DIODE
	D32	1SS133	DIODE
		OR MA165	DIODE
	D34	RD9.1ES-T1B2	ZENER DIODE
	R1	QRD161J-562	RESISTOR
	R2	QRD161J-822	RESISTOR
	R3	QRD161J-223	RESISTOR
	R4	QRD161J-182	RESISTOR
	R5	QRD161J-821	RESISTOR
	R6	QRD161J-681	RESISTOR
	R7	QRD161J-223	RESISTOR
	R8	QRD161J-273	RESISTOR
	R9	QRD161J-223	RESISTOR
	R10	QRD161J-681	RESISTOR
	R11	QRD161J-331	RESISTOR
	R12	QRD161J-331	RESISTOR
	R13	QRD161J-475	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-561	RESISTOR
	R17	QRD161J-821	RESISTOR
	R18	QRD161J-102	RESISTOR
	R19	QRD161J-561	RESISTOR
	R20	QRD161J-122	RESISTOR
	R21	QRD161J-102	RESISTOR
	R22	QRD161J-681	RESISTOR
	R23	QRD161J-102	RESISTOR
	R24	QRD161J-122	RESISTOR
	R25	QRD161J-562	RESISTOR
	R26	QRD121J-181	RESISTOR
	R27	QVZ3518-102	V RESISTOR, 0.25H DL VIDEO LEV
	R28	QRD161J-471	RESISTOR
	R29	QRD161J-821	RESISTOR
	R30	QRD161J-561	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R31	QRD161J-471	RESISTOR
	R32	QRD161J-153	RESISTOR
	R33	QRD161J-561	RESISTOR
	R34	QRD161J-182	RESISTOR
	R35	QRD161J-102	RESISTOR
	R36	QRD161J-221	RESISTOR
	R37	QRD161J-271	RESISTOR
	R38	QRD161J-471	RESISTOR
	R39	QRD161J-152	RESISTOR
	R40	QRD161J-152	RESISTOR
	R41	QRD161J-562	RESISTOR
	R42	QVZ3518-103	V RESISTOR, SHARPNESS PRESET
	R43	QRD161J-103	RESISTOR
	R44	QRD161J-331	RESISTOR
	R45	QRD161J-331	RESISTOR
	R46	QRD161J-331	RESISTOR
	R47	QRD161J-152	RESISTOR
	R48	QRD161J-391	RESISTOR
	R49	QRD161J-152	RESISTOR
	R50	QRD161J-102	RESISTOR
	R51	QRD161J-153	RESISTOR
	R52	QRD161J-683	RESISTOR
	R53	QRD161J-122	RESISTOR
	R54	QRD161J-152	RESISTOR
	R55	QRD161J-391	RESISTOR
	R57	QVZ3518-151	V RESISTOR, SUB EMPHA IN LEVEL
	R58	QRD161J-241	RESISTOR
	R60	QRD161J-273	RESISTOR
	R61	QRD161J-223	RESISTOR
	R62	QRD161J-222	RESISTOR
	R63	QRD161J-102	RESISTOR
	R64	QRD161J-102	RESISTOR
	R65	QRD161J-152	RESISTOR
	R66	QRD161J-561	RESISTOR
	R67	QRD161J-821	RESISTOR
	R68	QRD161J-471	RESISTOR
	R69	QRD161J-123	RESISTOR
	R70	QRD161J-473	RESISTOR
	R71	QRD161J-122	RESISTOR
	R72	QRD161J-102	RESISTOR
	R73	QRD161J-822	RESISTOR
	R74	QRD161J-182	RESISTOR
	R75	QVZ3518-471	V RESISTOR, EE Y LEVEL
	R76	QRD161J-332	RESISTOR
	R77	QRD161J-332	RESISTOR
	R78	QRD161J-183	RESISTOR
	R79	QRD161J-222	RESISTOR
	R80	QRD161J-681	RESISTOR
	R81	QRD161J-223	RESISTOR
	R82	QRD161J-393	RESISTOR
	R83	QRD161J-153	RESISTOR
	R84	QRD161J-154	RESISTOR
	R85	QRD161J-124	RESISTOR
	R86	QRD162J-0R0	RESISTOR
	R87	QRD161J-394	RESISTOR
	R88	QRD161J-475	RESISTOR
	R89	QRD161J-562	RESISTOR
	R91	QVZ3518-473	V RESISTOR, N-MODE PB Y LEVEL
	R92	QVZ3518-473	V RESISTOR' S-MODE PB Y LEVEL
	R93	QRD161J-223	RESISTOR
	R94	QRD161J-821	RESISTOR
	R95	QVZ3518-102	V RESISTOR' N-MODE REC FM
	R96	QRD161J-102	RESISTOR
	R97	QRD161J-103	RESISTOR
	R98	QRD161J-223	RESISTOR
	R99	QRD161J-681	RESISTOR
	R100	QRD161J-223	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R101	QRD161J-153	RESISTOR
	R102	QRD161J-561	RESISTOR
	R103	QVZ3518-102	V RESISTOR' S-MODE REC FM
	R104	QRD161J-102	RESISTOR
	R105	QRD161J-331	RESISTOR
	R106	QRD161J-102	RESISTOR
	R107	QVZ3518-151	V RESISTOR
	R108	QVZ3518-473	V RESISTOR' Y COMB GAIN ADJ
	R109	QRD161J-223	RESISTOR
	R110	QVZ3518-473	V SESISTOR' 2H DELAYED CHROMA
	R111	QRD161J-223	RESISTOR
	R112	QRD161J-391	RESISTOR
	R113	QRD161J-391	RESISTOR
	R114	QRD161J-391	RESISTOR
	R115	QRD161J-391	RESISTOR
	R116	QRD161J-391	RESISTOR
	R117	QRD161J-223	RESISTOR
	R118	QVZ3520-223	V RESISTOR, Y-COMB GAIN
	R119	QVZ3520-472	V RESISTOR, Y-COMB PHASE
	R120	QRD161J-102	RESISTOR
	R122	QRD161J-102	RESISTOR
	R123	QRD161J-102	RESISTOR
	R124	QRD161J-102	RESISTOR
	R125	QRD161J-102	RESISTOR
	R126	QRD161J-102	RESISTOR
	R127	QRD161J-473	RESISTOR
	R128	QRD161J-562	RESISTOR
	R129	QRD161J-103	RESISTOR
	R130	QRD161J-393	RESISTOR
	R131	QRD161J-272	RESISTOR
	R132	QRD161J-104	RESISTOR
	R133	QRD161J-104	RESISTOR
	R135	QRD161J-473	RESISTOR
	R136	QRD161J-393	RESISTOR
	R137	QRD161J-153	RESISTOR
	R138	QRD161J-102	RESISTOR
	R139	ERS-B39J-182	TERMISTOR
	R140	QRD161J-271	RESISTOR
	R141	QRD161J-223	RESISTOR
	R142	QRD161J-392	RESISTOR
	R145	QRD161J-562	RESISTOR
	R146	QRD161J-682	RESISTOR
⚠	R147	QRD121J-680	RESISTOR
	R148	QRD161J-471	RESISTOR
	R149	QRD161J-101	RESISTOR
	R150	QRD161J-101	RESISTOR
	R151	QRD161J-393	RESISTOR
	R152	QRD161J-822	RESISTOR
	R153	QRD161J-122	RESISTOR
	R154	QRD161J-271	RESISTOR
	R155	QRD161J-222	RESISTOR
	R156	QRD161J-221	RESISTOR
	R157	QRD161J-221	RESISTOR
	R161	QRD161J-222	RESISTOR
	R162	QRD161J-181	RESISTOR
	R163	QVZ3518-471	V RESISTOR, 0.25H DL VIDEO
	R164	QRD161J-102	RESISTOR
	R165	QRD161J-561	RESISTOR
	R166	QRD161J-151	RESISTOR
	R167	QRD161J-102	RESISTOR
	R168	QRD161J-102	RESISTOR
	R169	QRD161J-223	RESISTOR
	R170	QRD161J-103	RESISTOR
	R171	QRD161J-121	RESISTOR
	R172	QRD161J-101	RESISTOR
	R173	QRD161J-472	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R174	QRD161J-102	RESISTOR
	R175	QRD161J-331	RESISTOR
	R176	QRD161J-392	RESISTOR
	R177	ERT-D2FHL332S	THERMISTOR
	R178	QRD161J-272	RESISTOR
	R179	QRD161J-223	RESISTOR
	R180	QRD161J-122	RESISTOR
	R181	QRD161J-562	RESISTOR
	R182	QRD161J-101	RESISTOR
	R183	QRD161J-101	RESISTOR
	R184	QRD161J-392	RESISTOR
	R185	QRD161J-471	RESISTOR
	R186	QRD161J-391	RESISTOR
	R187	QRD161J-621	RESISTOR
	R188	QRD161J-392	RESISTOR
	R189	QRD161J-181	RESISTOR
	R190	QRD161J-821	RESISTOR
	R191	QRD161J-222	RESISTOR
	R192	ERT-D2FGL102S	THERMISTOR
	R193	QRD161J-473	RESISTOR
	R194	QRD161J-473	RESISTOR
	R195	QRD161J-561	RESISTOR
	R196	QRD161J-561	RESISTOR
	R197	QVZ3520-471	V RESISTOR, Y COMB ADJ
	R198	QRD161J-103	RESISTOR
	R199	QRD161J-121	RESISTOR
	R200	QRD161J-102	RESISTOR
	R201	QRD161J-103	RESISTOR
	R202	QRD161J-0R0	RESISTOR
	R204	QRD161J-102	RESISTOR
	R205	QRD161J-102	RESISTOR
	R209	QRD161J-474	RESISTOR
	R210	QRD161J-101	RESISTOR
	R211	QRD161J-101	RESISTOR
	C1	QCSB1HJ-560	CAPACITOR
	C2	QCBB1HJ-101	CAPACITOR
	C3	QCBB1HJ-181	CAPACITOR
	C4	QETB1EM-475	E CAPACITOR
	C5	QETB1HM-224	E CAPACITOR
	C6	QETC0JM-337	E CAPACITOR
	C7	QCVB1CN-103	CAPACITOR
	C8	QCSB1HJ-560	CAPACITOR
	C9	QETC1HM-105	E CAPACITOR
	C10	QCVB1CN-103	CAPACITOR
	C11	QCSB1HJ-680	CAPACITOR
	C13	QCVB1CN-103	CAPACITOR
	C14	QETC1HM-225	E CAPACITOR
	C15	QFN41HK-563	M CAPACITOR
	C16	QCBB1HJ-181	CAPACITOR
	C17	QCBB1HJ-391	CAPACITOR
	C18	QETC1HM-225	E CAPACITOR
	C19	QETC1CM-106	E CAPACITOR
	C20	QETC1EM-335	E CAPACITOR
	C21	QCVB1CN-103	CAPACITOR
	C22	QCVB1CN-103	CAPACITOR
	C23	QETC1CM-106	E CAPACITOR
	C24	QCVB1CN-103	CAPACITOR
	C25	QCVB1CN-103	CAPACITOR
	C26	QCVB1CN-103	CAPACITOR
	C27	QCVB1CN-103	CAPACITOR
	C28	QEK61EM-475	E CAPACITOR
	C29	QETC1EM-475	E CAPACITOR
	C30	QCVB1CN-103	CAPACITOR
	C31	QEK61EM-475	E CAPACITOR
	C32	QEK61EM-475	E CAPACITOR
	C33	QEK61AM-226	E CAPACITOR
	C34	QETC0JM-337	E CAPACITOR
	C35	QCVB1CN-103	CAPACITOR
	C36	QEP61EM-475	NP E CAPACITOR
	C37	QEK61EM-475	E CAPACITOR
	C38	QCVB1CN-103	CAPACITOR
	C40	QEK60JM-476	E CAPACITOR
	C41	QCVB1CN-103	CAPACITOR
	C42	QETC1CM-106	E CAPACITOR
	C43	QEK61CM-106	E CAPACITOR
	C44	QCVB1CN-103	CAPACITOR
	C45	QCVB1CN-103	CAPACITOR
	C46	QCVB1CN-103	CAPACITOR
	C47	QETC1CM-106	E CAPACITOR
	C48	QETC1CM-106	E CAPACITOR
	C49	QETC1CM-106	E CAPACITOR
	C50	QCVB1CN-103	CAPACITOR
	C51	QCSB1HJ-390	CAPACITOR
	C52	QCVB1CN-103	CAPACITOR
	C53	QETC1CM-476	E CAPACITOR
	C54	QETC1CM-106	E CAPACITOR
	C55	QEK61CM-106	E CAPACITOR
	C56	QEK41CM-106	E CAPACITOR
	C57	QEK61CM-106	E CAPACITOR
	C58	QEK61CM-106	E CAPACITOR
	C60	QEK61CM-476	E CAPACITOR
	C61	QCVB1CN-103	CAPACITOR
	C62	QCSB1HJ-470	CAPACITOR
	C63	QCVB1CN-103	CAPACITOR
	C64	QCSB1HJ-470	CAPACITOR
	C65	QEK60JM-476	E CAPACITOR
	C66	QEK61CM-106	E CAPACITOR
	C67	QCVB1CN-103	CAPACITOR
	C68	QEK61CM-106	E CAPACITOR
	C69	QCVB1CN-103	CAPACITOR
	C70	QEK61CM-476	E CAPACITOR
	C74	QCSB1HJ-560	CAPACITOR
	C76	QETC0JM-476	E CAPACITOR
	C77	QETC1EM-335	E CAPACITOR
	C78	QETC0JM-476	E CAPACITOR
	C79	QETC1CM-106	E CAPACITOR
	C80	QETC1CM-106	E CAPACITOR
	C81	QETC0JM-476	E CAPACITOR
	C82	QETC1EM-475	E CAPACITOR
	C83	QETC1EM-475	E CAPACITOR
	C84	QCBB1HJ-121	CAPACITOR
	C85	QCSB1HJ-560	CAPACITOR
	C86	QEK61CM-106	E CAPACITOR
	C87	QCSB1HJ-150	CAPACITOR
	C88	QEK61HM-225	E CAPACITOR
	C89	QEK61CM-106	E CAPACITOR
	C90	QEK61CM-476	E CAPACITOR
	C91	QCVB1CN-103	CAPACITOR
	C92	QETC1CM-106	E CAPACITOR
	C93	QCBB1HJ-101	CAPACITOR
	C94	QCSB1HJ-270	CAPACITOR
	C95	QCSB1HJ-180	CAPACITOR
	C96	QETC1HM-335	E CAPACITOR
	C97	QCBB1HJ-151	CAPACITOR
	C98	QETC1HM-105	E CAPACITOR
	C99	QED60JM-127	E CAPACITOR
	C100	QCVB1CN-103	CAPACITOR
	C101	QETC0JM-337	E CAPACITOR
	C102	QCSB1HJ-120	CAPACITOR
	C103	QCBB1HJ-121	CAPACITOR
	C104	QCBB1HJ-121	CAPACITOR
	C105	QCVB1CN-103	CAPACITOR
	C106	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C107	QCVB1CN-103	CAPACITOR
	C108	QCVB1CN-103	CAPACITOR
	C109	QCBB1HJ-101	CAPACITOR
	C110	QCVB1CN-103	CAPACITOR
	C111	QETC0JM-476	E CAPACITOR
	C112	QCVB1CN-103	CAPACITOR
	C113	QCBB1HJ-101	CAPACITOR
	C114	QCVB1CN-103	CAPACITOR
	C115	QCVB1CN-103	CAPACITOR
	C116	QCBB1HJ-101	CAPACITOR
	C117	QCVB1CN-103	CAPACITOR
	C118	QCVB1CN-103	CAPACITOR
	C119	QCVB1CN-103	CAPACITOR
	C120	QCVB1CN-103	CAPACITOR
	C121	QEK61CM-106	E CAPACITOR
	C122	QCVB1CN-103	CAPACITOR
	C123	QETC1HM-105	E CAPACITOR
	C124	QCVB1CN-103	CAPACITOR
	C125	QETC1CM-476	E CAPACITOR
	C126	QEK61AM-476	E CAPACITOR
	C127	QCVB1CN-103	CAPACITOR
	C129	QCSB1HK-5R6	CAPACITOR
	C130	QETC0JM-476	E CAPACITOR
	C131	QCVB1CN-103	CAPACITOR
	C132	QETC1AM-476	E CAPACITOR
	C133	QCVB1CN-103	CAPACITOR
	C134	QCVB1CN-103	CAPACITOR
	C135	QETC1CM-476	E CAPACITOR
	C136	QCVC1CN-103	CAPACITOR
	C137	QEK51CM-476	E CAPACITOR
	C138	QCVB1CN-103	CAPACITOR
	C139	QCVB1CN-103	CAPACITOR
	C140	QETC0JM-476	E CAPACITOR
	C141	QCVB1CN-103	CAPACITOR
	C142	QEN61HM-105	NP E CAPACITOR
	C143	QETC1HM-104	E CAPACITOR
	C144	QCVB1CN-103	CAPACITOR
	C146	QCSB1HJ-220	CAPACITOR
	C147	QCBB1HJ-101	CAPACITOR
	C148	QCVB1CN-103	CAPACITOR
	C149	QCSB1HJ-560	CAPACITOR
	C150	QCSB1HJ-390	CAPACITOR
	C151	QCVB1CN-103	CAPACITOR
	C152	QEK61CM-336	E CAPACITOR
	C153	QCSB1HK-5R6	CAPACITOR
	C154	QCSB1HJ-390	CAPACITOR
	C155	QCSB1HJ-120	CAPACITOR
	C156	QCSB1HJ-220	CAPACITOR
	C157	QCBB1HJ-181	CAPACITOR
	C159	QCVB1CN-103	CAPACITOR
	C160	QCBB1HJ-151	CAPACITOR
	C162	QEK61CM-106	E CAPACITOR
	C163	QEK61CM-106	E CAPACITOR
	C165	QEK61CM-476	E CAPACITOR
	C166	QCVB1CN-103	CAPACITOR
	C167	QETC1CM-107	E CAPACITOR
	C168	QCVB1CN-103	CAPACITOR
	C169	QETC1CM-106	E CAPACITOR
	C171	QCVB1CN-103	CAPACITOR
	C172	QCVB1CN-103	CAPACITOR
	C173	QCT25CH-470	CAPACITOR
	C174	QCBB1HJ-471	CAPACITOR
	C175	QCC31CJ-563	CAPACITOR
	C177	QCSB1HJ-470	CAPACITOR
	C180	QCSB1HJ-220	CAPACITOR
	C183	QCSB1HJ-390	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L1	PU59152-220J	PEAKING COIL
	L2	PU48530-101K	PEAKING COIL
	L3	PU48530-101K	PEAKING COIL
	L4	PU48530-101K	PEAKING COIL
	L5	PU48530-101K	PEAKING COIL
	L6	PU48530-101K	PEAKING COIL
	L7	PU48530-101K	PEAKING COIL
	L8	PU48530-101K	PEAKING COIL
	L9	PU48530-101K	PEAKING COIL
	L10	PU48530-101K	PEAKING COIL
	L12	PU48530-101K	PEAKING COIL
	L13	PU59152-220J	PEAKING COIL
	L14	PU48530-101K	PEAKING COIL
	L15	PU48530-101K	PEAKING COIL
	L16	PU59152-820J	PEAKING COIL
	L17	PU48530-101K	PEAKING COIL
	L18	PU59152-560J	PEAKING COIL
	L19	PU48530-101K	PEAKING COIL
	L20	PU48530-471K	PEAKING COIL
	L21	PU59152-150J	PEAKING COIL
	L22	PU48530-101K	PEAKING COIL
	L23	PU48530-471K	PEAKING COIL
	L24	PU48530-560J	PEAKING COIL
	L25	PU59152-221J	PEAKING COIL
	L26	PU59152-560J	PEAKING COIL
	L27	PU48530-101K	PEAKING COIL
	L28	PU48530-101K	PEAKING COIL
	L29	PU48530-101K	PEAKING COIL
	L30	PU60165-8R2G	PEAKING COIL
	L31	PU60165-8R2G	PEAKING COIL
	L32	PU48530-101K	PEAKING COIL
	L33	PU59152-180J	PEAKING COIL
	L35	PU59152-1R0K	PEAKING COIL
	L36	PU59152-1R0K	PEAKING COIL
	L38	PU59152-5R6J	PEAKING COIL
	L39	PU48530-101K	PEAKING COIL
	L40	PU59152-820J	PEAKING COIL
	L41	PU59152-470J	PEAKING COIL
	L42	PU59152-221J	PEAKING COIL
	L43	PU48530-101K	PEAKING COIL
	L44	PU59152-151J	PEAKING COIL
	EQ1	PU60099	EQUALIZER
	EQ2	PU60809	EQUALIZER
	EQ3	PU60810	EQUALIZER
	LPF1	PU60813	LOW & BAND PASS FILTER
	LPF2	PU60737	LOW PASS FILTER
	LPF3	PU60806-2	LOW PASS FILTER
	BPF2	PU60807	BAND PASS FILTER
	BPF3	PU60808-2	BAND PASS FILTER
	DL1	PU60815	2H DELAY LINE
	DL3	PU60816	1/4H DELAY LINE
⚠	X101	PU60438	CRYSTAL RESONATOR
	T1	PU60814	COIL, 4H DELAYED CHROMA
	T2	PU60814	COIL, 2H DELAYED CHROMA
	TP10	PU57545	TEST PIN, X40
		-COLOR SECTION-	
	IC301	PB20287A-02	COLOR MODULE BOARD ASSY
	IC302	PB20289A-02	JOG MODULE BOARD ASSY
	IC303	NJM2233AD	IC

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC401	BA7106LS	IC
	Q301	2SA933S	TRANSISTOR
	Q302	DTC144WS	TRANSISTOR
	Q303	DTA124ES	TRANSISTOR
	Q304	2SC1740S(QRS)	TRANSISTOR
	Q305	2SC1740S(QRS)	TRANSISTOR
	Q306	2SC2021Q,R,S	TRANSISTOR
	Q307	2SC2021Q,R,S	TRANSISTOR
	Q308	2SA937	TRANSISTOR
	Q309	2SC1740S(QRS)	TRANSISTOR
	Q310	DTC124ES	TRANSISTOR
	Q311	2SC1740S(QRS)	TRANSISTOR
	Q312	DTC114ES	TRANSISTOR
	Q313	DTC114ES	TRANSISTOR
	Q314	DTC144WS	TRANSISTOR
	Q315	2SC1740S(QRS)	TRANSISTOR
	Q316	2SA933S	TRANSISTOR
	Q317	2SC1740S(QRS)	TRANSISTOR
	Q318	2SC1740S(QRS)	TRANSISTOR
	Q319	2SC1740S(QRS)	TRANSISTOR
	Q320	DTC124ES	TRANSISTOR
	Q322	DTC124EF	TRANSISTOR
	Q323	DTC124ES	TRANSISTOR
	Q324	DTC124ES	TRANSISTOR
	Q326	2SA933S	TRANSISTOR
	Q327	2SA933S(QRS)	TRANSISTOR
	Q401	DTA124ES	TRANSISTOR
	Q402	DTA124ES	TRANSISTOR
	Q403	DTC124ES	TRANSISTOR
	D301	1SS133	DIODE
	OR	MA165	DIODE
	D302	1SS133	DIODE
	OR	MA165	DIODE
	D311	1SS133	DIODE
	OR	MA165	DIODE
	D312	1SS133	DIODE
	OR	MA165	DIODE
	D313	1SS133	DIODE
	OR	MA165	DIODE
	D314	1SS133	DIODE
	OR	MA165	DIODE
	D315	1SS133	DIODE
	OR	MA165	DIODE
	D401	1SS133	DIODE
	OR	MA165	DIODE
	D402	1SS133	DIODE
	OR	MA165	DIODE
	D403	1SS133	DIODE
	OR	MA165	DIODE
	R302	QRD161J-102	RESISTOR
	R303	QRD161J-102	RESISTOR
	R304	QRD161J-102	RESISTOR
	R305	QRD161J-102	RESISTOR
	R307	QRD161J-225	RESISTOR
	R308	QRD161J-103	RESISTOR
	R309	QRD161J-102	RESISTOR
	R310	QRD161J-222	RESISTOR
	R311	QRD161J-222	RESISTOR
	R312	QRD161J-561	RESISTOR
	R313	QRD161J-561	RESISTOR
	R314	QRD161J-103	RESISTOR
	R315	QRD161J-471	RESISTOR
	R316	QRD161J-223	RESISTOR
	R317	QRD161J-333	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R318	QRD161J-103	RESISTOR
	R319	QRD161J-102	RESISTOR
	R320	QRD161J-102	RESISTOR
	R321	QRD161J-561	RESISTOR
	R322	QRD161J-471	RESISTOR
	R323	QRD161J-272	RESISTOR
	R324	QRD161J-391	RESISTOR
	R325	QRD161J-393	RESISTOR
	R326	QRD161J-561	RESISTOR
	R327	QRD161J-333	RESISTOR
	R328	QRD161J-561	RESISTOR
	R329	QRD161J-222	RESISTOR
	R330	QRD161J-561	RESISTOR
	R331	QRD161J-561	RESISTOR
	R332	QRD161J-393	RESISTOR
	R333	QRD161J-223	RESISTOR
	R334	QRD161J-221	RESISTOR
	R335	QRD161J-391	RESISTOR
	R336	QRD161J-152	RESISTOR
	R337	QRD161J-333	RESISTOR
	R338	QRD161J-333	RESISTOR
	R339	QRD161J-151	RESISTOR
	R340	QRD161J-102	RESISTOR
	R341	QRD161J-391	RESISTOR
	R342	QRD161J-561	RESISTOR
	R343	QRD161J-393	RESISTOR
	R344	QRD161J-332	RESISTOR
	R345	QRD161J-472	RESISTOR
	R346	QRD161J-103	RESISTOR
	R347	QRD161J-473	RESISTOR
	R348	QRD161J-391	RESISTOR
	R349	QRD161J-821	RESISTOR
	R350	QRD161J-471	RESISTOR
	R351	QRD161J-102	RESISTOR
	R352	QRD161J-102	RESISTOR
	R353	QVZ3518-222	V RESISTOR, LP REC COLOR
	R354	QRD161J-222	RESISTOR
	R355	QVZ3518-222	V RESISTOR, SP REC COLOR
	R357	QRD162J-333	RESISTOR
	R358	QRD161J-223	RESISTOR
	R359	QRD161J-223	RESISTOR
	R360	QRD161J-102	RESISTOR
	R361	QRD161J-102	RESISTOR
	R362	QRD161J-103	RESISTOR
	R363	QRD161J-103	RESISTOR
	R364	QRD161J-223	RESISTOR
	R366	QRD162J-103	RESISTOR
	R367	QRD162J-473	RESISTOR
	R368	QRD162J-332	RESISTOR
	R401	QRD161J-103	RESISTOR
	R402	QRD161J-914	RESISTOR
	R403	QRD161J-104	RESISTOR
	R404	QRD161J-333	RESISTOR
	R405	QRD161J-273	RESISTOR
	C301	QETC1HM-105	E CAPACITOR
	C302	QETC1HM-105	E CAPACITOR
	C303	QCC31CJ-223	CAPACITOR
	C304	QETC0JM-107	E CAPACITOR
	C305	QETC1HM-105	E CAPACITOR
	C307	QCSB1HJ-330	CAPACITOR
	C308	QCSB1HJ-390	CAPACITOR
	C309	QFN41HJ-473	M CAPACITOR
	C310	QCSB1HJ-560	CAPACITOR
	C311	QEK60JM-476	E CAPACITOR
	C312	QCVB1CN-103	CAPACITOR
	C313	QCSB1HJ-560	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C314	QCBB1HJ-221	CAPACITOR
	C315	QCC31CK-682	CAPACITOR
	C316	QCVB1CN-103	CAPACITOR
	C317	QCVB1CN-103	CAPACITOR
	C318	QCBB1HJ-820	CAPACITOR
	C320	QCVB1CN-103	CAPACITOR
	C321	QETC1HM-105	E CAPACITOR
	C322	QETC1HM-104	E CAPACITOR
	C323	QEK61EM-475	E CAPACITOR
	C324	QCC31CK-104	CAPACITOR
	C325	QETC0JM-337	E CAPACITOR
	C326	QCC31CK-563	CAPACITOR
	C327	QETC0JM-107	E CAPACITOR
	C328	QETC1EM-335	E CAPACITOR
	C329	QETC0JM-337	E CAPACITOR
	C330	QETB1HM-474	CAPACITOR
	C331	QETC1HM-474	E CAPACITOR
	C332	QETC1HM-474	E CAPACITOR
	C333	QEK61HM-474	E CAPACITOR
	C334	QETC1HM-474	E CAPACITOR
	C335	QETC1CM-106	E CAPACITOR
	C336	QCVB1CN-103	CAPACITOR
	C337	QCBB1HJ-121	CAPACITOR
	C338	QCVB1CN-103	CAPACITOR
	C339	QCVB1CN-103	CAPACITOR
	C341	QCVB1CN-103	CAPACITOR
	C342	QCSB1HJ-100	CAPACITOR
	C343	QCVB1CN-103	CAPACITOR
	C345	QCVB1CN-103	CAPACITOR
	C346	QCVB1CN-103	CAPACITOR
	C347	QCSB1HJ-390	CAPACITOR
	C348	QCVB1CN-103	CAPACITOR
	C349	QCVB1CN-103	CAPACITOR
	C350	QCVB1CN-103	CAPACITOR
	C351	QCVB1CN-103	CAPACITOR
	C352	QEK61CM-476	E CAPACITOR
	C353	QCVB1CN-103	CAPACITOR
	C355	QCVB1CN-103	CAPACITOR
	C401	QEK61CM-106	E CAPACITOR
	C402	QETC1EM-335	E CAPACITOR
	C403	QCBB1HJ-471	CAPACITOR
	C404	QCVB1CN-103	CAPACITOR
	C405	QCVB1CN-103	CAPACITOR
	C406	QCVB1CN-103	CAPACITOR
	C407	QFN41HJ-471	M CAPACITOR
	C408	QCSB1HJ-470	CAPACITOR
	C409	QCXB1CN-472	CAPACITOR
	C410	QCSB1HK-4R7	CAPACITOR
	C411	QCSB1HJ-200	CAPACITOR
	C412	QETC0JM-107	E CAPACITOR
	C413	QCVB1CN-103	CAPACITOR
	L301	PU48530-101K	PEAKING COIL
	L303	PU48530-101K	PEAKING COIL
	L304	PU59152-390J	PEAKING COIL
	L305	PU48530-222J	PEAKING COIL
	L306	PU59152-221J	PEAKING COIL
	L307	PU48530-821J	PEAKING COIL
	L308	PU48530-101K	PEAKING COIL
	L309	PU59152-100J	PEAKING COIL
	L310	PU59152-100J	PEAKING COIL
	L311	PU59153-822J	PEAKING COIL
	L312	PU59153-101K	PEAKING COIL
	L313	PU59153-101K	PEAKING COIL
	L314	PU48530-101K	PEAKING COIL
	L316	PU59152-150J	PEAKING COIL
	L317	PU48530-101K	PEAKING COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L401	PU59152-330J	PEAKING COIL
	L402	PU48530-101K	PEAKING COIL
	EQ301	PU60811-2	EQUALIZER
	LPF301	PU58022	LOW PASS FILTER
	BPF301	PU57072	BAND PASS FILTER
	BPF302	PU60654	BAND PASS FILTER
	CF301	PU57073	CERAMIC FILTER
	DL301	PU58971-3	2H DELAY LINE
⚠	X301	PU60653	CRYSTAL UNITS
	T301	PU49057	LC BLOCK, APC ERROR PHASE
	T401	PU60655	COIL, SECAM DET
	J53	QWE213-36A2A2	WIRE
	J54	QWE214-24A2A2	WIRE
	J55	QWE21D-13A2A2	WIRE
	J56	QWE216-06A2A2	WIRE

****

TERMINAL BOARD ASSEMBLY <06>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20252G	TERMINAL BOARD ASSY,E
		PB20252A-01	TERMINAL BOARD ASSY,EG
	D1	1SS133	DIODE
	OR	MA165	DIODE
	R1	QRD161J-750	RESISTOR
	R2	QRD161J-750	RESISTOR
	R3	QRD161J-750	RESISTOR
	R4	QRD161J-750	RESISTOR
	R5	QRD161J-750	RESISTOR
	R7	QRD161J-102	RESISTOR
	R8	QRD161J-102	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-102	RESISTOR
	R11	QVZ3518-105	V RESISTOR, V LOCK
	C1	QCBB1HK-102	CAPACITOR,EG
	C2	QCBB1HK-102	CAPACITOR,EG
	LC1	PU59885-102	N FILTER,EG
	LC2	PU59885-102	N FILTER,EG
	LC3	PU59885-102	N FILTER,EG
	LC4	PU59885-102	N FILTER,EG
	LC5	PU59885-102	N FILTER,EG
	LC6	PU59885-102	N FILTER,EG
	SCW1	SDSF2608Z	TAPPING SCREW,X3
	SPC1	PU60010	SPACER
⚠	TB1	PQ20677-3	TERM.BOARD ASSY,E
⚠		PQ20677	TERM.BOARD ASSY,EG
	CN14	PU58929-18	CAP HOUSING
	CN15	PU58929-13	CAP HOUSING

****

IF BOARD ASSEMBLY <07>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10047F	IF BOARD ASSY
	IC1	M51365SP	IC
	Q1	2SC3354	TRANSISTOR
	Q2	2SC3354	TRANSISTOR
	Q3	2SC1317(RS)	TRANSISTOR
	Q4	2SC1740(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q5	2SC1740(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
	Q6	2SA933S(RS)	TRANSISTOR
		OR 2SA1309AR,S	TRANSISTOR
	Q7	2SC1740(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
	Q10	2SC3354	TRANSISTOR
	Q11	2SC1740(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
	Q12	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
		OR 2SC3399	TRANSISTOR
	Q13	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
		OR 2SC3399	TRANSISTOR
	D1	MTZ10B	ZENER DIODE
	D6	1SS133	DIODE
	D7	1SS133	DIODE
	D8	1SS133	DIODE
	R1	NRD718J-750NBU	RESISTOR
	R4	NRD718J-332NBU	RESISTOR
	R5	NRD718J-151NBU	RESISTOR
	R6	NRD718J-182NBU	RESISTOR
	R7	NRD718J-331NBU	RESISTOR
	R8	NRD718J-681NBU	RESISTOR
	R10	NRD718J-271NBU	RESISTOR
	R11	NRD718J-180NBU	RESISTOR
	R15	NRD718J-271NBU	RESISTOR
	R17	NRD718J-562NBU	RESISTOR
	R18	NRD718J-332NBU	RESISTOR
	R19	NRD718J-272NBU	RESISTOR
	R20	NRD718J-222NBU	RESISTOR
	R21	QVZ3518-472	V RESISTOR, RF AGC
		OR QVZ3523-472	V RESISTOR
	R22	NRD718J-824NBU	RESISTOR
	R24	NRD718J-821NBU	RESISTOR
	R31	NRD718J-222NBU	RESISTOR
	R32	NRD718J-102NBU	RESISTOR
	R33	NRD718J-223NBU	RESISTOR
	R34	NRD718J-470NBU	RESISTOR
	R35	NRD718J-561NBU	RESISTOR
	R36	NRD718J-561NBU	RESISTOR
	R37	NRD718J-271NBU	RESISTOR
	R38	NRD718J-182NBU	RESISTOR
	R39	NRD718J-272NBU	RESISTOR
	R40	QVZ3518-103	V RESISTOR, COLOR LEVEL
		OR QVZ3523-103	V RESISTOR
	R41	NRD718J-222NBU	RESISTOR
	R45	NRD718J-471NBU	RESISTOR
	R46	NRD718J-104NBU	RESISTOR
	R47	NRD718J-153NBU	RESISTOR
	R48	NRD718J-392NBU	RESISTOR
	R49	NRD718J-103NBU	RESISTOR
	R50	NRD718J-471NBU	RESISTOR
	R51	NRD718J-223NBU	RESISTOR
	R52	NRD718J-223NBU	RESISTOR
	R53	NRD718J-103NBU	RESISTOR
	R54	NRD718J-682NBU	RESISTOR
	R57	NRD718J-153NBU	RESISTOR
	R62	NRD718J-392NBU	RESISTOR
	R63	NRD718J-470NBU	RESISTOR
	R64	NRD718J-182NBU	RESISTOR
	R65	NRD718J-221NBU	RESISTOR
	R71	NRD718J-681NBU	RESISTOR
	R72	NRD718J-120NBU	RESISTOR
	R73	NRD718J-331NBU	RESISTOR
	R82	NRD718J-680NBU	RESISTOR
	R83	NRD718J-222NBU	RESISTOR
	R84	NRD718J-123NBU	RESISTOR
	R85	NRD718J-123NBU	RESISTOR
	R86	NRD718J-331NBU	RESISTOR
	R100	QRD162J-0R0	RESISTOR
	R101	QRD161J-182	RESISTOR
	R102	QRD161J-222	RESISTOR
	R104	QRD161J-393	RESISTOR
	C2	NCT02CH-5R6NBR	CAPACITOR
	C3	QCT25HH-101	CAPACITOR
	C4	NCT02CH-3R9NBR	CAPACITOR
	C5	NCB71HK-102NBR	CAPACITOR
	C6	NCX71CM-222NBR	CAPACITOR
	C7	NCB71HK-102NBR	CAPACITOR
	C8	NCB71HK-102NBR	CAPACITOR
	C10	QETC1CM-336	E CAPACITOR
	C11	NCY71CM-103NBR	CAPACITOR
	C13	NCX71CM-222NBR	CAPACITOR
	C14	PU57601-474MEZ	E CAPACITOR
	C15	QETC1CM-336	E CAPACITOR
	C16	NCX71CM-222NBR	CAPACITOR
	C17	NCF71EZ-223NBR	CAPACITOR
	C19	NCY71CM-103NBR	CAPACITOR
	C20	NCY71CM-103NBR	CAPACITOR
	C21	NCB71HK-101NBR	CAPACITOR
	C24	QETC1HM-105	E CAPACITOR
	C25	NCX71CM-222NBR	CAPACITOR
	C26	QFN31HK-222	M CAPACITOR
	C27	QETC1HM-474	E CAPACITOR
	C29	NCS71HJ-470NBR	CAPACITOR
	C31	QETC1HM-335	E CAPACITOR
	C32	NCF71EZ-223NBR	CAPACITOR
	C33	QETC1HM-474	E CAPACITOR
	C41	NCB71HK-102NBR	CAPACITOR
	C43	NCX71CM-222NBR	CAPACITOR
	C44	NCB71HK-102NBR	CAPACITOR
	C45	NCB71HK-102NBR	CAPACITOR
	C46	NCB71HK-102NBR	CAPACITOR
	C50	QETC1CM-336	E CAPACITOR
	C56	QETC1CM-336	E CAPACITOR
	C57	QEN41CM-336	NP E CAPACITOR
		OR QEN61CM-336	NP E CAPACITOR
	C58	NCS71HJ-100NBR	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C60	NCB71HK-102NBR	CAPACITOR
	L1	PU60025-1R0	PEAKING COIL
	L2	PU60025-1R0	PEAKING COIL
	L3	PU60025-1R2	PEAKING COIL
	L4	PU59152-150J	PEAKING COIL
	L5	PU59152-220J	PEAKING COIL
	L6	PU59152-6R8K	PEAKING COIL
	L7	PU59152-R22K	PEAKING COIL
	CF1	PU49295-2	CERAMIC FILTER, 5.5MHZ
	CF3	PU32990-2	CERAMIC FILTER, 5.5MHZ
	CF4	PU49295	CERAMIC FILTER, 5.5MHZ
	SAW1	PU60804	SAW FILTER
	SAW2	PU60765	SAW FILTER
	T1	PU60042-2	COIL, S.TRAP 33.4MHZ
	T2	PU60497	IF.TRANSFORMER, VCO 38.9MHZ
	T4	PU59488	COIL, DET 5.5MHZ
	T5	PU60046	IF.TRANSFORMER, SYNC 15,625MHZ
	T8	PU60259	COIL, 2FH TRAP 250KHZ
	TML1	PU59935-16	TERMINAL(JP1)

* * *

TUNER CTL BOARD ASSEMBLY <08>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20102F-01	TUNER CTL BOARD ASSY
⚠	RF1	PU60817	RF CONV & MIXER
⚠	TNR1	PU36487	V/U TUNER
	IC1	M50445-398SP	IC
	IC2	MSM16811RS	IC
		OR CAT93C46P	IC
	Q1	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
	Q2	2SK381(C)	FE TRANSISTOR
	Q3	UN4319VI	TRANSISTOR
	Q4	UN4319VI	TRANSISTOR
	Q5	UN4319VI	TRANSISTOR
	Q6	UN4319VI	TRANSISTOR
	Q7	DTA124ES	TRANSISTOR
	Q8	2SB810H,J	TRANSISTOR
	Q10	2SD1863(QR)	TRANSISTOR
		OR 2SC3243D,E	TRANSISTOR
	Q11	2SC1740S(RS)	TRANSISTOR
		OR 2SC3311A(RS)	TRANSISTOR
		OR 2SC536SPA(FG)	TRANSISTOR
	D1	1SS133	DIODE
	D2	E-452-2	DIODE
	D3	HZ30-2	ZENER DIODE
	D4	RD5.6ES-T1B1	ZENER DIODE
		OR MTZ5.6A	ZENER DIODE
	R3	QRD161J-472	RESISTOR
	R4	QRD161J-472	RESISTOR
	R5	QRD161J-104	RESISTOR
	R6	QRD161J-472	RESISTOR
	R7	QRD161J-103	RESISTOR
	R8	QRD161J-472	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-121	RESISTOR
	R13	QRD161J-152	RESISTOR
	R14	QRD161J-562	RESISTOR
	R15	QRD161J-472	RESISTOR
	R16	QRD161J-472	RESISTOR
	R17	QRD161J-153	RESISTOR
	R18	QRD161J-101	RESISTOR
	R19	QRD161J-103	RESISTOR
	R20	QRD161J-104	RESISTOR
	R22	QRD161J-104	RESISTOR
	R26	QRD161J-104	RESISTOR
	R32	QRD161J-222	RESISTOR
	R33	QRD161J-222	RESISTOR
	R34	QRD161J-222	RESISTOR
	R35	QRD161J-102	RESISTOR
	R36	QRD161J-103	RESISTOR
	R40	QRD161J-102	RESISTOR
	R41	QRD161J-331	RESISTOR
	R45	QRD161J-103	RESISTOR
	R46	QRD161J-103	RESISTOR
	R47	QRD161J-103	RESISTOR
	R48	QRD161J-103	RESISTOR
	RA1	QRB047J-104	RESISTOR ARRAY
	C2	QCBB1HK-102	CAPACITOR
	C3	QETC1CM-107	E CAPACITOR
	C4	QETC1CM-106	E CAPACITOR
	C5	QETC1CM-106	E CAPACITOR
	C6	QEK61HM-225	E CAPACITOR
	C7	QETC1CM-106	E CAPACITOR
	C8	QCBB1HK-102	CAPACITOR
	C9	QETC1CM-106	E CAPACITOR
	C13	QFN31HJ-153	M CAPACITOR
	C14	QFV81HJ-474	M CAPACITOR
		OR QFZ9011-474	MM CAPACITOR
	C15	QETC1HM-106	E CAPACITOR
	C16	QCBB1HK-102	CAPACITOR
	C17	QCVB1CM-103	CAPACITOR
	C18	QCT25CH-220	CAPACITOR
	C19	QCT25CH-270	CAPACITOR
	C20	PU57601-335MCZ	E CAPACITOR
	C23	QETC1CM-106	E CAPACITOR
	C24	QETC1AM-107	E CAPACITOR
	C25	QETC1AM-336	E CAPACITOR
	C31	QCVB1CM-103	CAPACITOR
	L1	PU59152-R22K	PEAKING COIL
	L2	PU59152-100J	PEAKING COIL
	L7	PU59152-1R0K	PEAKING COIL
	L8	PU59152-1R0K	PEAKING COIL
	L9	PU59152-2R7J	PEAKING COIL
⚠	X1	PU58554-2	CRYSTAL RESONATOR, 4.0M
	HD1	PU36378	HOLDER
	WR1	PW30401-AB22T	COAXIAL CORD
	WR2	PW30401-AE10S	COAXIAL CORD
	WR3	PW30401-AE10S	COAXIAL CORD
	CN2	PU58844-9	CAP HOUSING
	CN3	PU58844-2	CAP HOUSING
	CN4	PU58844-5	CAP HOUSING
	CN5	PU58844-6	CAP HOUSING
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

AUDIO BOARD ASSEMBLY <09>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20292A-01	AUDIO BOARD ASSY,EG
		PB20292D	AUDIO BOARD ASS'Y,E
	IC1	AN3380NK	IC
	IC2	TA7361AP	IC
	IC3	PB20167A-01	FMA MODULE BOARD ASSY
	IC101	UPC78N05	IC
	Q1	2SC1740S(RS)	TRANSISTOR
	Q2	2SC3311(RS)	TRANSISTOR
	Q3	DTC114ES	TRANSISTOR
	Q4	2SC1740S(RS)	TRANSISTOR
	Q5	DTC114ES	TRANSISTOR
	Q6	DTC114ES	TRANSISTOR
	Q7	DTC114ES	TRANSISTOR
	Q8	DTA114ES	TRANSISTOR
	Q9	DTA114ES	TRANSISTOR
	Q10	2SC1740S(RS)	TRANSISTOR
	Q11	2SC1740S(RS)	TRANSISTOR
	Q12	DTC143TS	TRANSISTOR
	Q13	DTC143TS	TRANSISTOR
	Q16	2SC3311(RS)	TRANSISTOR
	Q17	DTA114ES	TRANSISTOR
	Q18	DTC114ES	TRANSISTOR
	Q20	DTA114ES	TRANSISTOR
	Q23	DTA143TS	TRANSISTOR
	Q101	2SD1764	TRANSISTOR
	Q102	2SA854S(QR)	TRANSISTOR
	Q103	2SA854S(QR)	TRANSISTOR
	D1	1SS133	DIODE
	OR	MA165	DIODE
	D3	1SS133	DIODE
	OR	MA165	DIODE
	D5	1SS133	DIODE
	OR	MA165	DIODE
	D6	1SS133	DIODE
	OR	MA165	DIODE
	D7	1SS133	DIODE
	OR	MA165	DIODE
	D8	1SS133	DIODE
	OR	MA165	DIODE
	D9	HZ2BLL	ZENER DIODE
	D12	1SS133	DIODE
	OR	MA165	DIODE
	D16	1SS133	DIODE
	OR	MA165	DIODE
	D17	1SS133	DIODE
	OR	MA165	DIODE
	D101	HZ12A2	ZENER DIODE
	D102	1SS133	DIODE
	OR	MA165	DIODE
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-682	RESISTOR
	R5	QRD161J-151	RESISTOR
	R6	QRD161J-152	RESISTOR
	R7	QRD161J-222	RESISTOR
	R8	QRD161J-100	RESISTOR
	R9	QVZ3518-473	V RESISTOR, BIAS ADJ
	R10	QRD161J-333	RESISTOR
	R11	QRD161J-473	RESISTOR
	R12	QRD161J-101	RESISTOR
	R13	QRD161J-273	RESISTOR
	R14	QRD161J-3R9	RESISTOR
	R15	QRD161J-103	RESISTOR
	R18	QRD161J-0R0	RESISTOR
	R20	QRD161J-183	RESISTOR
	R21	QRD161J-270	RESISTOR
	R22	QRD161J-470	RESISTOR
	R23	QRD161J-303	RESISTOR
	R25	QRD161J-103	RESISTOR
	R26	QRD161J-274	RESISTOR
	R27	QRD161J-471	RESISTOR
	R28	QVZ3518-102	V RESISTOR, PB LEVEL ADJ
	R29	QRD161J-102	RESISTOR
	R31	QRD161J-151	RESISTOR
	R32	QRD161J-102	RESISTOR
	R33	QRD161J-102	RESISTOR
	R34	QRD161J-151	RESISTOR
	R40	QVZ3518-222	V RESISTOR, EE LEVEL (L)
	R41	QVZ3518-222	V RESISTOR, EE LEVEL (R)
	R43	QRD161J-101	RESISTOR
	R44	QRD161J-101	RESISTOR
	R45	QRD161J-392	RESISTOR
	R46	QRD161J-332	RESISTOR
	R47	QRD161J-123	RESISTOR
	R48	QRD161J-223	RESISTOR
	R49	QRD161J-274	RESISTOR
	R50	QRD161J-222	RESISTOR
	R51	QRD161J-222	RESISTOR
	R52	QRD161J-103	RESISTOR
	R53	QRD161J-333	RESISTOR
	R54	QRD161J-183	RESISTOR
	R55	QRD161J-392	RESISTOR
	R56	QRD161J-272	RESISTOR
	R57	QRD161J-181	RESISTOR
	R58	QRD161J-333	RESISTOR
	R59	QRD161J-333	RESISTOR
	R60	QRD161J-333	RESISTOR
	R62	QRD161J-333	RESISTOR
	R63	QRD161J-102	RESISTOR
	R64	QRD161J-331	RESISTOR
	R65	QRD161J-223	RESISTOR
	R66	QRD161J-6R8	RESISTOR
	R67	QRD161J-333	RESISTOR
	R68	QRD161J-333	RESISTOR
	R70	QRD161J-273	RESISTOR
	R72	QRD161J-392	RESISTOR
	R73	QVZ3518-332	V RESISTOR, LEVEL IND(L)
	R74	QVZ3518-332	V RESISTOR, LEVEL IND(R)
	R76	QRD161J-151	RESISTOR
	R80	QVZ3518-331	V RESISTOR, FM REC ADJ
	R81	QRD161J-103	RESISTOR
	R82	QRD161J-153	RESISTOR
	R83	QRD162J-151	RESISTOR
	R84	QRD162J-151	RESISTOR
	R85	QRD161J-222	RESISTOR
	R86	QRD161J-103	RESISTOR
	R87	QRD161J-102	RESISTOR
	R88	QRD161J-102	RESISTOR
	R89	QRD161J-820	RESISTOR
	R91	QRD161J-103	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R101	QRD161J-182	RESISTOR
	R103	QRD161J-103	RESISTOR
	R104	QRD161J-222	RESISTOR
	R105	QRD161J-103	RESISTOR
	R106	QRD161J-681	RESISTOR
	R107	QRD161J-152	RESISTOR
	R108	QRD161J-391	RESISTOR
	R109	QRD161J-332	RESISTOR
	R110	QRD161J-153	RESISTOR
	C1	QETC1CM-106	E CAPACITOR
	C2	QETC1AM-476	E CAPACITOR
	C3	QEP61CM-106	NP E CAPACITOR
	C4	QETC1CM-106	E CAPACITOR
	C5	QETC1CM-226	E CAPACITOR
	C6	QETC1AM-336	E CAPACITOR
	C7	QETC1AM-476	E CAPACITOR
	C8	QCBB1HK-102	CAPACITOR
	C9	QCBB1HK-101	CAPACITOR
	C10	QETC1AM-336	E CAPACITOR
	C11	QETC1AM-107	E CAPACITOR
	C12	QETC1CM-226	E CAPACITOR
	C13	QETC1CM-106	E CAPACITOR
	C14	QEP61CM-106	NP E CAPACITOR
	C15	QETC1AM-476	E CAPACITOR
	C16	QETC1CM-106	E CAPACITOR
	C17	QCBB1HJ-331	CAPACITOR
	C18	QFV71HJ-223	M CAPACITOR
	OR	QFN31HJ-223	M CAPACITOR
	C19	QCC11EJ-222	CAPACITOR
	C20	QCC11EJ-102	CAPACITOR
	C21	QEK61CM-226	E CAPACITOR
	C22	QETC1EM-475	E CAPACITOR
	C24	QCBB1HJ-561	CAPACITOR
	C25	QETC1HM-225	E CAPACITOR
	C26	QETC1AM-336	E CAPACITOR
	C27	QETC0JM-476	E CAPACITOR
	C28	QFN31HJ-104	M CAPACITOR
	C29	QFV71HJ-473	M CAPACITOR
	C30	QETC1HM-105	E CAPACITOR
	C32	QFN31HJ-123	M CAPACITOR
	C33	QFV71HJ-274	M CAPACITOR
	C34	QEB51CM-226	E CAPACITOR
	C35	QEB51HM-105	E CAPACITOR
	C36	QETC1CM-106	E CAPACITOR
	C37	QETC1AM-336	E CAPACITOR
	C38	QETC1CM-476	E CAPACITOR
	C39	QETC1AM-336	E CAPACITOR
	C40	QETC1CM-106	E CAPACITOR
	C41	QETC1CM-476	E CAPACITOR
	C42	QETC1HM-225	E CAPACITOR
	C43	QETC1CM-106	E CAPACITOR
	C44	QETC1HM-225	E CAPACITOR
	C45	QEN61HM-225	NP E CAPACITOR
	C46	QEN61HM-225	NP E CAPACITOR
	C47	QETC1HM-225	E CAPACITOR
	C49	QCF31HP-223	CAPACITOR
	C50	QFV71HJ-104	M CAPACITOR
	OR	QFN31HJ-104	M CAPACITOR
	C51	QFV71HJ-104	M CAPACITOR
	OR	QFN31HJ-104	M CAPACITOR
	C52	QFV71HJ-104	M CAPACITOR
	OR	QFN31HJ-104	M CAPACITOR
	C53	QCF31HP-223	CAPACITOR
	C54	QEK60JM-107	E CAPACITOR
	C55	QCVB1CN-103	CAPACITOR
	C56	QCBB1HJ-102	CAPACITOR
	C57	QCSB1HJ-330	CAPACITOR
	C58	QCBB1HJ-331	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C59	QCBB1HJ-102	CAPACITOR
	C60	QCVB1CN-103	CAPACITOR
	C61	QCVB1CN-103	CAPACITOR
	C62	QCVB1CN-103	CAPACITOR
	C63	QCC11EJ-272	CAPACITOR
	C66	QETC1CM-106	E CAPACITOR
	C67	QETC1CM-106	E CAPACITOR
	C68	QETC1HM-225	E CAPACITOR
	C69	QETC1HM-225	E CAPACITOR
	C70	QCBB1HJ-391	CAPACITOR
	C71	QCBB1HJ-391	CAPACITOR
	C72	QCBB1HK-561	CAPACITOR
	C73	QCBB1HK-561	CAPACITOR
	C74	QCC11EJ-332	CAPACITOR
	C75	QCC11EJ-102	CAPACITOR
	C76	QFV71HJ-333	M CAPACITOR
	OR	QFN31HJ-333	M CAPACITOR
	C77	QETC1CM-106	E CAPACITOR
	C78	QFV71HJ-104	M CAPACITOR
	OR	QFN31HJ-104	M CAPACITOR
	C79	QCC11EJ-273	CAPACITOR
	C101	QEK61EM-336	E CAPACITOR
	C102	QCBB1HK-102	CAPACITOR
	C103	QEK61HM-105	E CAPACITOR
	C104	QETC1CM-106	E CAPACITOR
	C105	QFV81HJ-153	M CAPACITOR
	C106	QCBB1HJ-681	CAPACITOR
	C107	QCBB1HJ-391	CAPACITOR,EG
	L1	PU54223-101J	PEAKING COIL
	L3	PU58308-392J	PEAKING COIL
	L4	PU54223-221J	PEAKING COIL
	L5	PU54223-101J	PEAKING COIL
	BPF1	PU60610	BAND PASS FILTER
	BPF2	PU60611	BAND PASS FILTER
⚠	T1	PU60320	OSC TRANSFORMER
⚠	T2	PU60321	OSC TRANSFORMER
	HN1	PU58018-1-2	PWB HINGE,X2
⚠	HS1	PU60185	HEAT SINK, FOR Q101
	HS2	PU60261	HEAT SINK, FOR IC101
	SCW1	DPSP3008Z	SCREW, FOR Q101
	SLD1	PU59960	P/R AMP SHIELD1
	SLD2	PU59961	P/R AMP SHIELD2
	SLD3	PQ43345	SHIELD PLATE
	TP31	PU55774	TEST PIN,X7,(31-34,53,54,GND)
	CN1	PU58844-3Y	CAP HOUSING
	CN2	PU59555-8	CAP HOUSING
	CN3	PU58844-2	CAP HOUSING
	CN4	PU59555-5	CAP HOUSING
	CN5	PU58844-4	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING
	CN7	PU58844-4	CAP HOUSING
	CN8	PU58844-4	CAP HOUSING
	CN9	PU58844-8	CAP HOUSING
	CN10	PU59555-5	CAP HOUSING,E
		PU58844-5	CAP HOUSING,EG
	CN11	PU58844-3	CAP HOUSING
	CN12	PU59555-6	CAP HOUSING
	CN14	PU58844-2Y	CAP HOUSING
⚠	CP1	ICP-F20	CIRCUIT PROTECTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

****

****

* AUDIO VIDEO IN/OUT BOARD ASSY <10 > *

****

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20251C	AUDIO VIDEO IN/OUT BOARD ASSY
	CN2	PU58844-3	CAP HOUSING
	CN3	PU59555-5	CAP HOUSING
	CN16	PU58929-16	CAP HOUSING
	CN17	PU58929-15	CAP HOUSING
	CN301	PU58844-5	CAP HOUSING
	CN304	PU58844-6	CAP HOUSING
	CN307	PU59555-4	CAP HOUSING

-AUDIO SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC1	TC4052BP	IC
	IC2	M5218P	IC
	IC3	M5218P	IC
	Q1	2SD1450S,T	TRANSISTOR
	Q2	2SC1740S(QRS)	TRANSISTOR
	Q3	2SC1740S(QRS)	TRANSISTOR
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-102	RESISTOR
	R4	QRD161J-102	RESISTOR
	R5	QRD161J-102	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-103	RESISTOR
	R8	QRD161J-103	RESISTOR
	R9	QRD161J-473	RESISTOR
	R10	QRD161J-104	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-0R0	RESISTOR
	R13	QRD161J-823	RESISTOR
	R14	QRD161J-221	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-332	RESISTOR
	R17	QRD161J-332	RESISTOR
	R18	QRD161J-224	RESISTOR
	R19	QRD161J-224	RESISTOR
	R20	QRD161J-0R0	RESISTOR
	R21	QRD161J-0R0	RESISTOR
	R22	QRD161J-682	RESISTOR
	R23	QRD161J-682	RESISTOR
	R24	QRD161J-302	RESISTOR
	R25	QRD161J-302	RESISTOR
	R26	QRD161J-101	RESISTOR
	R27	QRD161J-122	RESISTOR
	R28	QRD161J-561	RESISTOR
	R29	QRD161J-222	RESISTOR
	R30	QRD161J-473	RESISTOR
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-222	RESISTOR
	RA1	QRB045J-223XC	RESISTOR ARRAY
		OR QRB045J-223C	RESISTOR ARRAY
	RA2	QRB055J-104XC	RESISTOR ARRAY
		OR QRB055J-104C	RESISTOR ARRAY
	RA3	QRB065J-104XC	RESISTOR ARRAY
		OR QRB065J-104C	RESISTOR ARRAY

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C1	QEK61CM-106	E CAPACITOR
	C2	QEP61CM-106	NP E CAPACITOR
	C3	QEK61CM-106	E CAPACITOR
	C4	QEK61CM-106	E CAPACITOR
	C5	QEK61CM-106	E CAPACITOR
	C6	QEK61CM-106	E CAPACITOR
	C7	QEP61CM-106	NP E CAPACITOR
	C8	QEK61CM-106	E CAPACITOR
	C9	QEK60JM-107	E CAPACITOR
	C10	QEP61HM-335	NP E CAPACITOR
	C11	QEP61HM-335	NP E CAPACITOR
	C12	QEK61HM-105	E CAPACITOR
	C13	QEK61HM-105	E CAPACITOR
	C14	QEK61HM-105	E CAPACITOR
	C16	QEK61CM-476	E CAPACITOR
	C20	QEK61CM-476	E CAPACITOR
	C21	QEK61CM-106	E CAPACITOR
	SLD1	PQ42994	SHIELD PLATE
	SLD2	PQ42995	SHIELD CASE

-VIDEO SECTION-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	IC301	NJM2234S	IC
	IC302	NJM2234S	IC
	IC303	NJM2243S	IC
	IC304	NJM2234S	IC
	IC305	TC74HC4066P	IC
	Q301	2SA933S(RS)	TRANSISTOR
		OR 2SA1309R	TRANSISTOR
	Q302	2SA933S(RS)	TRANSISTOR
		OR 2SA1309RTA	TRANSISTOR
	Q303	2SA933S(RS)	TRANSISTOR
		OR 2SA1309RTA	TRANSISTOR
	Q304	2SB810H,J	TRANSISTOR
	Q305	DTA124ES	TRANSISTOR
	Q306	2SA933S(RS)	TRANSISTOR
		OR 2SA1309RTA	TRANSISTOR
	Q307	2SC1740S(QRS)	TRANSISTOR
	Q308	2SC1740S(QRS)	TRANSISTOR
	Q309	2SC1740S(QRS)	TRANSISTOR
	Q311	2SC1740S(QRS)	TRANSISTOR
	Q312	2SC1740S(QRS)	TRANSISTOR
	Q313	2SC1740S(QRS)	TRANSISTOR
	Q314	2SC1740S(QRS)	TRANSISTOR
	Q315	2SC1740S(QRS)	TRANSISTOR
	Q316	2SA933S(RS)	TRANSISTOR
		OR 2SA1309RTA	TRANSISTOR
	Q317	DTC144WS	TRANSISTOR
	Q318	2SA933S(RS)	TRANSISTOR
		OR 2SA1309RTA	TRANSISTOR
	Q319	2SC1740S(QRS)	TRANSISTOR
	D301	1SS133	DIODE
		OR MA165	DIODE
	D302	1SS133	DIODE
		OR MA165	DIODE
	D303	1SS133	DIODE
		OR MA165	DIODE
	D304	1SS133	DIODE
		OR MA165	DIODE
	D305	1SS133	DIODE
		OR MA165	DIODE
	D306	1SS133	DIODE
		OR MA165	DIODE
	D307	1SS133	DIODE
		OR MA165	DIODE
	D308	1SS133	DIODE
		OR MA165	DIODE
	D309	1SS133	DIODE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		OR MA165	DIODE
	D310	1SS133	DIODE
		OR MA165	DIODE
	D311	1SS133	DIODE
		OR MA165	DIODE
	D312	1SS133	DIODE
		OR MA165	DIODE
	D313	1SS133	DIODE
		OR MA165	DIODE
	D314	1SS133	DIODE
		OR MA165	DIODE
	D315	1SS133	DIODE
		OR MA165	DIODE
	D316	1SS133	DIODE
		OR MA165	DIODE
	D317	1SS133	DIODE
		OR MA165	DIODE
	D318	1SS133	DIODE
		OR MA165	DIODE
	D319	1SS133	DIODE
		OR MA165	DIODE
	D320	1SS133	DIODE
		OR MA165	DIODE
	D321	1SS133	DIODE
		OR MA165	DIODE
	D322	1SS133	DIODE
		OR MA165	DIODE
	D323	1SS133	DIODE
		OR MA165	DIODE
	D324	1SS133	DIODE
		OR MA165	DIODE
	D325	1SS133	DIODE
		OR MA165	DIODE
	D326	1SS133	DIODE
		OR MA165	DIODE
	D327	1SS133	DIODE
		OR MA165	DIODE
	D328	1SS133	DIODE
		OR MA165	DIODE
	D329	1SS133	DIODE
		OR MA165	DIODE
	D330	1SS133	DIODE
		OR MA165	DIODE
	D331	1SS133	DIODE
		OR MA165	DIODE
	R301	QRD161J-472	RESISTOR
	R302	QRD161J-680	RESISTOR
	R303	QRD127J-391	RESISTOR
	R304	QRD161J-750	RESISTOR
	R305	QRD161J-472	RESISTOR
	R306	QRD181J-561	RESISTOR
	R307	QRD161J-750	RESISTOR
	R308	QRD181J-561	RESISTOR
	R309	QRD161J-750	RESISTOR
	R310	QRD161J-472	RESISTOR
	R311	QRD161J-102	RESISTOR
	R312	QRD161J-102	RESISTOR
	R313	QRD161J-472	RESISTOR
	R314	QRD161J-472	RESISTOR
	R315	QRD161J-332	RESISTOR
	R316	QRD161J-473	RESISTOR
	R317	QRD161J-103	RESISTOR
	R319	QRD161J-103	RESISTOR
	R320	QRD161J-223	RESISTOR
	R321	QRD161J-223	RESISTOR
	R322	QRD161J-222	RESISTOR
	R325	QRD161J-222	RESISTOR
	R326	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R327	QRD161J-102	RESISTOR
	R328	QRD161J-223	RESISTOR
	R329	QRD161J-392	RESISTOR
	R330	QRD161J-272	RESISTOR
	R331	QRD161J-331	RESISTOR
	R332	QRD161J-101	RESISTOR
	R333	QRD161J-272	RESISTOR
	R335	QRD161J-223	RESISTOR
	R337	QRD161J-182	RESISTOR
	R338	QRD161J-103	RESISTOR
	R339	QRD161J-223	RESISTOR
	R340	QRD161J-272	RESISTOR
	R341	QRD161J-562	RESISTOR
	R342	QRD161J-223	RESISTOR
	R343	QRD161J-562	RESISTOR
	R344	QRD161J-103	RESISTOR
	R345	QRD161J-393	RESISTOR
	R346	QRD161J-472	RESISTOR
	R347	QRD161J-101	RESISTOR
	R348	QRD161J-560	RESISTOR
	R349	QRD161J-560	RESISTOR
	R351	QRD161J-103	RESISTOR
	R352	QRD161J-683	RESISTOR
	R353	QRD161J-103	RESISTOR
	R354	QRD161J-123	RESISTOR
	C301	QEK61CM-106	E CAPACITOR
	C302	QEK61CM-106	E CAPACITOR
	C303	QEK61CM-106	E CAPACITOR
	C304	QEK61CM-106	E CAPACITOR
	C305	QEK61CM-106	E CAPACITOR
	C306	QCVB1CN-103	CAPACITOR
	C307	QCVB1CN-103	CAPACITOR
	C308	QEK60JM-476	E CAPACITOR
	C309	QEK61CM-226	E CAPACITOR
	C310	QEK61CM-226	E CAPACITOR
	C311	QCVB1CN-103	CAPACITOR
	C312	QEK61CM-476	E CAPACITOR
	C313	QETB1AM-477	E CAPACITOR
	C314	QCVB1CN-103	CAPACITOR
	C315	QEK61CM-476	E CAPACITOR
	C316	QETB0JM-477	E CAPACITOR
	C317	QCVB1CN-103	CAPACITOR
	C318	QCVB1CN-103	CAPACITOR
	C319	QEK61CM-476	E CAPACITOR
	C320	QCVB1CN-103	CAPACITOR
	C321	QETC1EM-476	E CAPACITOR
	C322	QCVB1CN-103	CAPACITOR
	C323	QCVB1CN-103	CAPACITOR
	C324	QCVB1CN-103	CAPACITOR
	C325	QCBB1HJ-101	CAPACITOR
	C327	QCSB1HJ-560	CAPACITOR
	C328	QCVB1CN-103	CAPACITOR
	C329	QEK61CM-106	E CAPACITOR
	C330	QCVB1CN-103	CAPACITOR
	C332	QCVB1CN-103	CAPACITOR
	C333	QCVB1CN-103	CAPACITOR
	C334	QEK61CM-106	E CAPACITOR
	C335	QCSB1HJ-560	CAPACITOR
	C336	QCVB1CN-103	CAPACITOR
	C337	QCVB1CN-103	CAPACITOR
	C338	QCVB1CN-103	CAPACITOR
	C339	QEK61HM-105	E CAPACITOR
	C341	QEK60JM-476	E CAPACITOR
	C342	QCVB1CN-103	CAPACITOR
	C343	QCVB1CN-103	CAPACITOR
	C344	QCVB1CN-103	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C345	QCVB1CN-103	CAPACITOR
	C346	QCSB1HJ-390	CAPACITOR
	C347	QCVB1CN-103	CAPACITOR
	C350	QEK61AM-226	E CAPACITOR
	C353	QCBB1HJ-561	CAPACITOR
	L301	PU48530-101K	PEAKING COIL
	L302	PU48530-101K	PEAKING COIL
	L303	PU48530-101K	PEAKING COIL
	L304	PU48530-101K	PEAKING COIL
	L306	PU48530-101K	PEAKING COIL
	L307	PU59152-180J	PEAKING COIL
	L308	PU48530-101K	PEAKING COIL
	L309	PU48530-101K	PEAKING COIL
	L310	PU59153-822J	PEAKING COIL
	L311	PU59152-100J	INDUCTOR
	EQ301	PU54838	EQUALIZER
	BPF301	PU57072	BAND PASS FILTER
	SLD1	PQ43207	SHIELD COVER

****

****
* AUDIO CONTROL HEAD BOARD <12> *
****

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB40029	A/CTL HEAD BOARD
	CN1	PU58844-103	CAP HOUSING
	CN2	PU58844-104B	CAP HOUSING

****

****
* DEMODULATOR BOARD ASSEMBLY <14> *
****

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20242A-01	DEMODULATOR BOARD ASSY
	IC1	TDA3800GS	IC
	Q1	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q2	2SD1292(QR)	TRANSISTOR
		OR 2SC3068	TRANSISTOR
	Q3	DTC114ES	TRANSISTOR
		OR UN4211	TRANSISTOR
		OR 2SC3402	TRANSISTOR
	Q4	DTC114ES	TRANSISTOR
		OR UN4211	TRANSISTOR
		OR 2SC3402	TRANSISTOR
	Q5	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q6	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q7	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
		OR 2SC3399	TRANSISTOR
	Q8	DTC114ES	TRANSISTOR
		OR 2SC3402	TRANSISTOR
		OR UN4211	TRANSISTOR
	Q9	2SD1450S,T	TRANSISTOR
		OR 2SD1292(QR)	TRANSISTOR
	Q10	2SD1450S,T	TRANSISTOR
		OR 2SD1292(QR)	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D6	1SS133	DIODE
	R1	QRD161J-103	RESISTOR
	R2	QVZ3518-103	V RESISTOR, SEPARATION ADJ
	R3	QRD161J-153	RESISTOR
	R4	QRD161J-331	RESISTOR
	R5	QRD161J-821	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-104	RESISTOR
	R8	QRD161J-154	RESISTOR
	R9	QRD161J-271	RESISTOR
	R10	QRD161J-273	RESISTOR
	R11	QRD161J-103	RESISTOR
	R12	QRD161J-103	RESISTOR
	R13	QRD161J-103	RESISTOR
	R14	QRD161J-103	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-103	RESISTOR
	R21	QVZ3518-332	V RESISTOR, AUDIO L LEVEL
	R22	QRD161J-222	RESISTOR
	R23	QRD161J-103	RESISTOR
	R24	QVZ3518-332	V RESISTOR, AUDIO R LEVEL
	R25	QRD161J-222	RESISTOR
	R26	QRD161J-103	RESISTOR
	R27	QRD161J-821	RESISTOR
	R28	QRD161J-821	RESISTOR
	C1	QETC1CM-106	E CAPACITOR
	C2	QFN31HK-392	M CAPACITOR
	C3	QFN31HK-392	M CAPACITOR
	C4	QFN31HK-392	M CAPACITOR
	C5	QETC1CM-106	E CAPACITOR
	C6	QETC1CM-106	E CAPACITOR
	C7	QETC1CM-476	E CAPACITOR
	C8	QCF31HP-223	CAPACITOR
	C9	QCC11EK-473	CAPACITOR
	C10	QFP31HJ-102	M CAPACITOR
	C11	QETC1CM-477	E CAPACITOR
	C12	QCC11EK-473	CAPACITOR
	C13	QETC1CM-106	E CAPACITOR
	C14	QETC1CM-106	E CAPACITOR
	C15	QETC1CM-336	E CAPACITOR
	C16	QETC1CM-107	E CAPACITOR
	C17	QETC1HM-105	E CAPACITOR
	C18	QETC1CM-476	E CAPACITOR
	C19	QFN31HJ-123	M CAPACITOR
	C20	QETC1CM-106	E CAPACITOR
	C30	QFN31HJ-123	M CAPACITOR
	BPF1	PU58226	BAND PASS FILTER
	CF1	PU52775	CERAMIC FILTER, 5.74MHZ
	CF2	PU52775-2	CERAMIC FILTER, 5.74MHZ
	T1	PU59489	COIL, SAP DET
	T2	PU59490	COIL
	T3	PU59243	FH TRAP
	T4	PU59243	FH TRAP
	CN1	PU58844-6	CAP HOUSING
	CN4	PU58844-2	CAP HOUSING

TIMER BOARD ASSEMBLY <20>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20250E	TIMER BOARD ASS'Y,E
		PB20250A	TIMER BOARD ASSY,EG
	IC1	UPD75216ACW-188	IC
	IC2	S-8053HNB	IC
	IC301	SDA5642	IC,EG
	Q1	2SD1863(QR)	TRANSISTOR
	Q2	2SC3311A(RS)	TRANSISTOR
	Q3	DTC124ES	TRANSISTOR
	Q4	2SC3311A(RS)	TRANSISTOR
	Q5	DTC124ES	TRANSISTOR
	Q6	DTC124ES	TRANSISTOR
	D1	RD9.1ES-T1B2	ZENER DIODE
	OR	HZS9.1EB2	ZENER DIODE
	D2	DA210S	DIODE
	D3	MTZJ4.7C	ZENER DIODE
	OR	RD4.7ES-T1B3	ZENER DIODE
	D4	MTZ8.2B	ZENER DIODE
	OR	RD8.2ES-T1B2	ZENER DIODE
	D5	MTZ8.2B	ZENER DIODE
	OR	RD8.2ES-T1B2	ZENER DIODE
	D6	1SS133	DIODE
	OR	MA165	DIODE
	D7	1SS133	DIODE
	OR	MA165	DIODE
	D8	1SS133	DIODE
	OR	MA165	DIODE
	D9	1SS133	DIODE
	OR	MA165	DIODE
	D10	1SS133	DIODE
	OR	MA165	DIODE
	D25	1SS133	DIODE
	D26	1SS133	DIODE
	D29	1SS133	DIODE
	D30	1SS133	DIODE
	D35	1SS133	DIODE
	R1	QRD161J-121	RESISTOR
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-103	RESISTOR
	R4	QRD161J-682	RESISTOR
	R5	QRD161J-104	RESISTOR
	R6	QRD161J-151	RESISTOR
	R7	QRD161J-102	RESISTOR
	R8	QRD161J-104	RESISTOR
	R9	QRD161J-472	RESISTOR
	R10	QRD161J-102	RESISTOR
	R11	QRD161J-102	RESISTOR
	R12	QRD161J-102	RESISTOR
	R13	QRD161J-102	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-102	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-102	RESISTOR
	R18	QRD161J-102	RESISTOR
	R19	QRD161J-102	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-102	RESISTOR
	R22	QRD161J-472	RESISTOR
	R23	QRD161J-472	RESISTOR
	R24	QRD161J-472	RESISTOR
	R25	QRD161J-472	RESISTOR
	R26	QRD161J-102	RESISTOR
	R29	QRD161J-472	RESISTOR
	R30	QRD161J-472	RESISTOR
	R31	QRD161J-472	RESISTOR
	R32	QRD161J-472	RESISTOR
	R33	QRD161J-472	RESISTOR
	R34	QRD161J-472	RESISTOR
	R35	QRD161J-472	RESISTOR
	R36	QRD161J-472	RESISTOR
	R37	QRD161J-472	RESISTOR
	R38	QRD161J-472	RESISTOR
	R39	QRD161J-472	RESISTOR
	R40	QRD161J-472	RESISTOR
	R41	QRD161J-472	RESISTOR
	R42	QRD161J-472	RESISTOR
	R43	QRD161J-333	RESISTOR
	R44	QRD161J-472	RESISTOR
	R45	QRD161J-472	RESISTOR
	R46	QRD161J-102	RESISTOR
	R47	QRD162J-333	RESISTOR
	R49	QRD161J-272	RESISTOR
	R50	QRD161J-271	RESISTOR
	R51	QRD161J-271	RESISTOR
	R301	QRD161J-824	RESISTOR,EG
	R302	QRD161J-101	RESISTOR,EG
	R303	QRD161J-562	RESISTOR,EG
	R304	QRD161J-104	RESISTOR,EG
	R305	QRD161J-103	RESISTOR
	R306	QRD161J-103	RESISTOR
	R307	QRD161J-105	RESISTOR,EG
	R308	QRD161J-824	RESISTOR,EG
	R309	QRD161J-104	RESISTOR,EG
	R310	QRD161J-202	RESISTOR,EG
	RA1	QRB067J-224	RESISTOR ARRAY
	OR	QRB069J-224C	RESISTOR ARRAY
	OR	QRB069J-224	RESISTOR ARRAY
	RA2	QRB067J-104	RESISTOR ARRAY
	OR	QRB069J-104	RESISTOR ARRAY
	OR	QRB069J-104C	RESISTOR ARRAY
	RA3	QRB047J-333	RESISTOR ARRAY
	OR	QRB049J-333	RESISTOR ARRAY
	OR	QRB049J-333C	RESISTOR ARRAY
	RA4	QRB037J-104	RESISTOR ARRAY
	OR	QRB039J-104	RESISTOR ARRAY
	OR	QRB039J-104C	RESISTOR ARRAY
	C1	QETC1CM-336	E CAPACITOR
	C2	QETC1HM-335	E CAPACITOR
	C3	QCBB1HJ-102	CAPACITOR
	C4	PU60676-473	E CAPACITOR
	OR	QEA40HZ-473	E CAPACITOR (DOUBLE)
	C5	QETC1AM-336	E CAPACITOR
	C6	QETC0JM-336	E CAPACITOR
	C7	QCVB1CN-103	CAPACITOR
	C8	QETC1CM-106	E CAPACITOR
	C9	QCVB1CN-103	CAPACITOR
	C10	PU57672-200	TRIMMER CAPACITOR, VXO
	C11	QCT30CH-120	CAPACITOR
	C301	QFN31HJ-103	M CAPACITOR,EG
	C302	QFN31HJ-333	M CAPACITOR,EG
	C303	QFN31HJ-103	M CAPACITOR,EG
	C304	QETC1HM-104	E CAPACITOR,EG
	C305	QCBB1HJ-151	CAPACITOR,EG

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L1	PU48530-101K	PEAKING COIL
⚠	X1	PU60226-2	CRYSTAL RESONATOR
	TP1	PU56008	TEST PIN, X3(1-3)
	CN1	PU59555-8	CAP HOUSING
	CN2	PU58844-9	CAP HOUSING
	CN3	PU58844-6	CAP HOUSING
	CN4	PU59555-12	CAP HOUSING
	CN5	PU58844-3	CAP HOUSING
	CN6	PU58844-2	CAP HOUSING
	CN11	PU58844-2	CAP HOUSING
	CN12	PU58844-2	CAP HOUSING
	CN301	PU58844-6	CAP HOUSING
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

OPERATION BOARD ASSEMBLY <22>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB20253A	OPERATION BOARD ASSY
	R201	QRD161J-222	RESISTOR
	R202	QRD161J-222	RESISTOR
	R203	QRD161J-332	RESISTOR
	R204	QRD161J-472	RESISTOR
	R205	QRD161J-103	RESISTOR
	R206	QRD161J-223	RESISTOR
	R208	QRD161J-222	RESISTOR
	R209	QRD161J-332	RESISTOR
	R210	QRD161J-472	RESISTOR
	R211	QRD161J-103	RESISTOR
	R212	QRD161J-223	RESISTOR
	R215	QRD161J-332	RESISTOR
	R216	QRD161J-472	RESISTOR
	S1	PU57550	TACT SWITCH,1
		OR PU53598	TACT SWITCH
	S2	PU57550	TACT SWITCH,2
		OR PU53598	TACT SWITCH
	S3	PU57550	TACT SWITCH,3
		OR PU53598	TACT SWITCH
	S4	PU57550	TACT SWITCH,4
		OR PU53598	TACT SWITCH
	S5	PU57550	TACT SWITCH,5
		OR PU53598	TACT SWITCH
	S6	PU57550	TACT SWITCH,6
		OR PU53598	TACT SWITCH
	S7	PU57550	TACT SWITCH,7
		OR PU53598	TACT SWITCH
	S8	PU57550	TACT SWITCH,8/DAILY
		OR PU53598	TACT SWITCH
	S9	PU57550	TACT SWITCH,9/REPEAT
		OR PU53598	TACT SWITCH
	S10	PU57550	TACT SWITCH,0/AUX
		OR PU53598	TACT SWITCH
	S11	PU57550	TACT SWITCH,GO TO
		OR PU53598	TACT SWITCH
	S12	PU57550	TACT SWITCH,C.MEMORY
		OR PU53598	TACT SWITCH
	S13	PU57550	TACT SWITCH,C.RESET
		OR PU53598	TACT SWITCH
	S14	PU57550	TACT SWITCH,DISP
		OR PU53598	TACT SWITCH
	S15	PU57550	TACT SWITCH,REC/OTR
		OR PU53598	TACT SWITCH
	S16	PU57550	TACT SWITCH,TIMER
		OR PU53598	TACT SWITCH
	S17	PU57550	TACT SWITCH,CH+/NEXT
		OR PU53598	TACT SWITCH
	S18	PU57550	TACT SWITCH,CH-/BACK
		OR PU53598	TACT SWITCH
	S19	PU57550	TACT SWITCH,SEARCH
		OR PU53598	TACT SWITCH
	S20	PU57550	TACT SWITCH,VPS/CH
		OR PU53598	TACT SWITCH
	S21	PU57550	TACT SWITCH, CANCEL SKIP
		OR PU53598	TACT SWITCH
	S22	PU57550	TACT SWITCH,STORE
		OR PU53598	TACT SWITCH
	S23	PU57550	TACT SWITCH,FINE+
		OR PU53598	TACT SWITCH
	S24	PU57550	TACT SWITCH,FINE-
		OR PU53598	TACT SWITCH
	S25	PU57550	TACT SWITCH,C.ADJ
		OR PU53598	TACT SWITCH
	S26	PU57550	TACT SWITCH,PROG
		OR PU53598	TACT SWITCH
	S27	PU57550	TACT SWITCH,SP/LP
		OR PU53598	TACT SWITCH
	S29	PU57550	TACT SWITCH,SIMUL
		OR PU53598	TACT SWITCH
	S201	PU57550	TACT SWITCH,STOP
		OR PU53598	TACT SWITCH
	S202	PU57550	TACT SWITCH, PAUSE/STILL
		OR PU53598	TACT SWITCH
	S203	PU57550	TACT SWITCH,PLAY/X2
		OR PU53598	TACT SWITCH
	S204	PU57550	TACT SWITCH,REW
		OR PU53598	TACT SWITCH
	S205	PU57550	TACT SWITCH,FF
		OR PU53598	TACT SWITCH
	S206	PU57550	TACT SWITCH,SEARCH(-)
		OR PU53598	TACT SWITCH
	S207	PU57550	TACT SWITCH,SEARCH(+)
		OR PU53598	TACT SWITCH
	S209	PU57550	TACT SWITCH,INSERT
		OR PU53598	TACT SWITCH
	S210	PU57550	TACT SWITCH,S-VHS
		OR PU53598	TACT SWITCH
	S211	PU57550	TACT SWITCH,ERASE
		OR PU53598	TACT SWITCH
	S212	PU57550	TACT SWITCH,MARK
		OR PU53598	TACT SWITCH
	S213	PU57550	TACT SWITCH,A.MON
		OR PU53598	TACT SWITCH
	S214	PU57550	TACT SWITCH,MIX
		OR PU53598	TACT SWITCH
	S217	PU57550	TACT SWITCH,A.DUB
		OR PU53598	TACT SWITCH
	S219	PU57550	TACT SWITCH,EJECT
		OR PU53598	TACT SWITCH
	CN1	PU60566-116	FPC CONNECTOR

SW/JACK BOARD ASSEMBLY<26><36>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10153C	SW/JACK BOARD ASSY,E

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
		PB10153A	SW/JACK BOARD ASSY,EG

– SWITCH BOARD ASSEMBLY < 26 > –

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PB10153A1	SWITCH BOARD ASSY
	D201	SLH-34VT3F	LE DIODE
	R200	QRD161J-102	RESISTOR
	R201	QRD161J-331	RESISTOR
	R213	QRD161J-222	RESISTOR
	R401	QRD161J-823	RESISTOR
	R402	QRD161J-333	RESISTOR
	R403	QRD161J-333	RESISTOR
	S215	PU57550	TACT SWITCH, POWER
	OR	PU53598	TACT SWITCH
	S401	PU58488-1-1	SLIDE SWITCH, INPUT SEL
	S405	PU58486-1-1	SLIDE SWITCH, EDIT
	S407	PU58488-1-1	SLIDE SWITCH, LEVEL IND
	S408	PU58486-1-1	SLIDE SWITCH, NORMAL AUDIO/REC
	S409	PU58486-1-1	SLIDE SWITCH, ALC
	S410	PU58486-1-1	SLIDE SWITCH, AC ONLINE
	S418	PU58486-1-1	SLIDE SWITCH, VIDEO OUT
	HD1	PQM30038-3	LED HOLDER

-JACK BOARD ASSEMBLY<36>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PB10153B2	JACK BOARD ASSY,E
		PB10153A2	JACK BOARD ASSY,EG
	R231	QRD161J-103	RESISTOR
	R404	PU60565	V RESISTOR,HP LEVEL
	L1	PU59152-390J	PEAKING COIL,EG
	L2	PU59152-390J	PEAKING COIL,EG
	ETH1	PQ43763	EARTH PLATE,EG
	J401	PU58356-2	JACK(HEADPHONE)
	J402	PU58355-2	MIC JACK

* * *

DISPLAY/STEP BOARD ASSY<27><37>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10155B-01	DISPLAY/STEP BOARD ASSY,E
		PB10155A-01	DISPLAY/STEP BOARD ASSY,EG

-DISPALY BOARD ASSEMBLY<27>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA1	PB10155B1-01	DISPLAY BOARD ASSY,E
		PB10155A1-01	DISPLAY BOARD ASSY,EG
	IC101	MSC7112-01SS	IC
	IC102	MSC1146BRS	IC
	IC103	SBX1492-01	INFRARED RAYS UNIT
	Q101	2SK658	FE TRANSISTOR
	D101	SLR-55VC3F	LE DIODE, MARK
	D102	SLR-55VC3F	LE DIODE, ERASE
	D103	MTZ5.1B	ZENER DIODE
	D104	SLR-55VC3F	LE DIODE, STEREO
	D105	SLR-55MC3F	LE DIODE,BILINGUAL
	D107	SLR-55MC3F	LE DIODE,S.CASSETTE
	D109	SLR-34MC3F	LE DIODE, S-VHS
	D110	SLR-34MC3F	LE DIODE, S-VHS
	D111	SLR-34MC3F	LE DIODE, S-VHS
	R101	QRD161J-102	RESISTOR
	R102	QRD161J-102	RESISTOR
	R103	QRD161J-102	RESISTOR
	R104	QRD161J-273	RESISTOR
	R105	QRD161J-221	RESISTOR
	R106	QRD161J-221	RESISTOR
	R107	QRD161J-102	RESISTOR
	R108	QRD161J-103	RESISTOR
	R109	QRD161J-103	RESISTOR
	R110	QRD161J-103	RESISTOR
	R111	QRD161J-153	RESISTOR
	R112	QRD161J-104	RESISTOR
	R113	QRD161J-103	RESISTOR
	R114	QRD161J-101	RESISTOR
	R115	QRD161J-101	RESISTOR
	R116	QRD161J-103	RESISTOR
	R117	QRD161J-101	RESISTOR
	R118	QRD161J-101	RESISTOR
	R119	QRD161J-104	RESISTOR
	R120	QRD161J-471	RESISTOR
	R121	QRD161J-102	RESISTOR
	R122	QRD161J-102	RESISTOR
	R123	QRD161J-561	RESISTOR
	R124	QRD161J-102	RESISTOR
	R125	PU59375	SLIDE VR.,REC LEVEL
	R207	QRD161J-222	RESISTOR
	R214	QRD161J-222	RESISTOR
	R402	PU60257	V RESISTOR,PICTURE SHARPNESS
	C101	QCBB1HJ-101	CAPACITOR
	C102	QER61HM-104	E CAPACITOR
	C103	QER60JM-336	E CAPACITOR
	C104	QCVB1CM-103	CAPACITOR
	C105	QER61VM-106	E CAPACITOR
	C106	QER60JM-226	E CAPACITOR
	C107	QER60JM-226	E CAPACITOR
	C108	QER61CM-106	E CAPACITOR
	C109	QFJ41HJ-223	M CAPACITOR
	C110	QFJ41HJ-333	M CAPACITOR
	C111	QCVB1CM-103	CAPACITOR
	C112	QCVB1CM-103	CAPACITOR
	C113	QER61VM-226	E CAPACITOR
	C114	QEK40JM-337	E CAPACITOR
	C115	QCSB1HJ-330	CAPACITOR
	C116	QCSB1HJ-330	CAPACITOR
	C117	QCF11EZ-473	CAPACITOR
	S208	PU57550	TACT SWITCH, TRACKING(-)
	OR	PU53598	TACT SWITCH
	S216	PU57550	TACT SWITCH, TRACKING(+)
	OR	PU53598	TACT SWITCH
	FDP1	PU60660	FLUORESCENT DISPLAY PANEL,E
		PU60660-2	FLUORESCENT DISPLAY PANEL,EG
	HD1	PQM30038-1-2	LED HOLDER,X5
	HD2	PQ42602	LED SHADE

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	HD3	PQ31309	FDP HOLDER (L)
	HD4	PQ31310	FDP HOLDER (R)
	CN105	PU59513-9	CAP HOUSING
	CN107	PU59555-6	CAP HOUSING
	CN108	PU59555-4	CAP HOUSING
	CN109	PU59513-2	CAP HOUSING

-STEP BOARD ASSEMBLY<37>-

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA2	PB10155A2-01	STEP BOARD ASSY
	CN1	PU59555-12	CAP HOUSING
	CN2	PU59555-4	CAP HOUSING
	CN3	PU60566-116	FPC CONNECTOR

* * *

SERVO SUB BOARD ASSEMBLY <39>

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB30095A-02	SERVO SUB BOARD ASSY
	IC1	BU3791	IC
	Q1	DTC144ES	TRANSISTOR
		OR UN4213	TRANSISTOR
		OR 2SC3399	TRANSISTOR
	Q2	DTC124ES	TRANSISTOR
	Q3	DTC144WS	TRANSISTOR
	D1	1SS133	DIODE
		OR MA165	DIODE
	R1	QRD161J-103	RESISTOR
	R2	QRD161J-104	RESISTOR
	R3	QRD161J-104	RESISTOR
	R4	QRD161J-104	RESISTOR
	R5	QRD161J-104	RESISTOR
	R6	QRD161J-822	RESISTOR
	R7	QRD161J-104	RESISTOR
	R8	QRD161J-103	RESISTOR
	R9	QRD161J-563	RESISTOR
	R10	QRD161J-472	RESISTOR
	C1	QCBB1HJ-102	CAPACITOR
	C2	QCC11CK-104	CAPACITOR
	C3	QCBB1HJ-102	CAPACITOR
	C4	QCBB1HJ-121	CAPACITOR
	C5	QEK61AM-336	E CAPACITOR
	C6	QFN31HJ-103	M CAPACITOR
	CN1	PU59555-7	CAP HOUSING
	CN2	PU58844-7	CAP HOUSING
	CN5	PU58844-2	CAP HOUSING

* * *

PRE/REC AMP BOARD ASSEMBLY < 43 >

*⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10194A	PRE/REC AMP BOARD ASSY
	IC1	TA8609P	IC
	IC2	TA8733F	IC
	IC3	AN6392	IC
	Q1	2SC2412K	TRANSISTOR
	Q2	2SC2412K	TRANSISTOR
	Q3	2SC2412K	TRANSISTOR
	Q4	2SC2412K	TRANSISTOR
	Q6	2SC2412K	TRANSISTOR
	Q7	2SC2412K	TRANSISTOR
	Q8	2SA1037K	TRANSISTOR
	Q9	2SA1037K	TRANSISTOR
	Q10	DTC144EK	TRANSISTOR
	Q11	DTC144EK	TRANSISTOR
	Q12	DTC124EK	TRANSISTOR
	Q13	2SA1036K(R)	TRANSISTOR
	Q14	2SA1036K(R)	TRANSISTOR
	Q15	DTC124EK	TRANSISTOR
	Q16	DTC144WK	TRANSISTOR
	Q101	DTA124EK	TRANSISTOR
	Q102	DTA124EK	TRANSISTOR
	Q103	DTC144WK	TRANSISTOR
	Q104	2SA1037K	TRANSISTOR
	Q105	2SC2412K	TRANSISTOR
	Q106	2SC2412K	TRANSISTOR
	Q107	2SA1037K	TRANSISTOR
	Q108	2SC2412K	TRANSISTOR
	Q109	2SA1037K	TRANSISTOR
	Q110	DTC124EK	TRANSISTOR
	Q111	2SC2412K	TRANSISTOR
	Q112	2SC2412K	TRANSISTOR
	Q113	2SC2412K	TRANSISTOR
	Q114	2SC2412K	TRANSISTOR
	Q115	2SC2412K	TRANSISTOR
	Q116	2SC2412K	TRANSISTOR
	Q117	2SC2412K	TRANSISTOR
	Q118	2SA1037K	TRANSISTOR
	Q119	2SC2412K	TRANSISTOR
	D1	DAN202K	DIODE
	D2	DAN202K	DIODE
	D3	DAN202K	DIODE
	D5	DAN202K	DIODE
	D101	DAN202K	DIODE
	D102	DAN202K	DIODE
	D103	DAP202K	DIODE
	D104	MA157	DIODE
	D105	MA157	DIODE
	R1	QRSA08J-100YN	RESISTOR
	R2	QRSA08J-272YN	RESISTOR
	R3	QRSA08J-100YN	RESISTOR
	R4	QRSA08J-272YN	RESISTOR
	R5	QRSA08J-103YN	RESISTOR
	R6	QRSA08J-100YN	RESISTOR
	R7	QRSA08J-100YN	RESISTOR
	R8	QRSA08J-272YN	RESISTOR
	R9	QRSA08J-272YN	RESISTOR
	R10	QRSA08J-103YN	RESISTOR
	R11	QVZ3531-152	V RESISTOR, SP CH-1 Ω
	R12	QVZ3531-152	V RESISTOR, CH-2 Ω
	R13	QVZ3531-152	V RESISTOR, CH-1 Ω
	R14	QRSA08J-103YN	RESISTOR
	R15	QVZ3531-152	V RESISTOR, SP CH-2 Ω
	R19	QRSA08J-122YN	RESISTOR
	R20	QRSA08J-221YN	RESISTOR
	R21	QRSA08J-102YN	RESISTOR
	R22	QRSA08J-122YN	RESISTOR
	R23	QRSA08J-221YN	RESISTOR
	R24	QRSA08J-102YN	RESISTOR
	R25	QRSA08J-122YN	RESISTOR
	R26	QRSA08J-122YN	RESISTOR
	R27	QRSA08J-103YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R28	QRSA08J-103YN	RESISTOR
	R29	QRSA08J-393YN	RESISTOR
	R30	QRSA08J-393YN	RESISTOR
	R31	QRD161J-391	RESISTOR
	R32	QRSA08J-471YN	RESISTOR
	R33	QRSA08J-391YN	RESISTOR
	R34	QRSA08J-623YN	RESISTOR
	R35	QRSA08J-821YN	RESISTOR
	R36	QRSA08J-680YN	RESISTOR
	R37	QRSA08J-820YN	RESISTOR
	R38	QRSA08J-102YN	RESISTOR
	R39	QRSA08J-472YN	RESISTOR
	R40	QRSA08J-222YN	RESISTOR
	R41	QRSA08J-332YN	RESISTOR
	R42	QRSA08J-393YN	RESISTOR
	R43	QRD161J-222	RESISTOR
	R44	QRSA08J-393YN	RESISTOR
	R45	QRSA08J-222YN	RESISTOR
	R46	QRSA08J-103YN	RESISTOR
	R47	QRSA08J-103YN	RESISTOR
⚠	R48	PU52108-150	POSISTOR
	R49	QRD161J-333	RESISTOR
	R50	QRSA08J-101YN	RESISTOR
	R51	QRSA08J-103YN	RESISTOR
	R52	QRSA08J-823YN	RESISTOR
	R53	QRSA08J-102YN	RESISTOR
	R54	QRSA08J-821YN	RESISTOR
	R55	QRSA08J-102YN	RESISTOR
	R56	QRSA08J-102YN	RESISTOR
	R101	QRSA08J-223YN	RESISTOR
	R102	QRSA08J-273YN	RESISTOR
	R103	QRSA08J-102YN	RESISTOR
	R104	QRSA08J-102YN	RESISTOR
	R105	QRSA08J-471YN	RESISTOR
	R106	PU57457-152	V RESISTOR,FREQ RES(S-MODE,LP)
	R107	QRSA08J-103YN	RESISTOR
	R108	PU57457-222	V RESISTOR,FREQ RES(S-MODE,SP)
	R109	QRSA08J-561YN	RESISTOR
	R110	QRSA08J-152YN	RESISTOR
	R111	QRSA08J-561YN	RESISTOR
	R112	QRSA08J-472YN	RESISTOR
	R113	QRSA08J-561YN	RESISTOR
	R114	QRSA08J-152YN	RESISTOR
	R117	QRSA08J-102YN	RESISTOR
	R118	QRSA08J-102YN	RESISTOR
	R119	QRSA08J-332YN	RESISTOR
	R120	QRSA08J-102YN	RESISTOR
	R121	QRSA08J-102YN	RESISTOR
	R122	QRSA08J-271YN	RESISTOR
	R123	QRSA08J-561YN	RESISTOR
	R124	QRSA08J-751YN	RESISTOR
	R125	QRSA08J-102YN	RESISTOR
	R126	QRSA08J-102YN	RESISTOR
	R127	QRSA08J-222YN	RESISTOR
	R128	QRSA08J-561YN	RESISTOR
	R129	QRSA08J-101YN	RESISTOR
	R130	PU57457-332	V RESISTOR, FREQ RES (N-MODE SP)
	R131	PU57457-332	V RESISTOR,FREQ RES(N-MODE LP)
	R134	QRSA08J-102YN	RESISTOR
	R135	QRSA08J-103YN	RESISTOR
	R136	QRSA08J-223YN	RESISTOR
	R137	QRSA08J-471YN	RESISTOR
	R138	QRSA08J-102YN	RESISTOR
	R139	QRSA08J-102YN	RESISTOR
	R140	QRSA08J-392YN	RESISTOR
	R141	QRSA08J-102YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R142	QRSA08J-682YN	RESISTOR
	R143	QRSA08J-361YN	RESISTOR
	R144	QRSA08J-561YN	RESISTOR
	R145	QRSA08J-152YN	RESISTOR
	R146	QRSA08J-332YN	RESISTOR
	R147	QRSA08J-472YN	RESISTOR
	R148	QRSA08J-I84YN	RESISTOR
	R149	QRSA08J-682YN	RESISTOR
	R150	QRSA08J-184YN	RESISTOR
	R151	QRSA08J-223YN	RESISTOR
	R152	QRSA08J-102YN	RESISTOR
	R154	QRSA08J-821YN	RESISTOR
	C1	QCFA1HZ-103	CAPACITOR
	C2	PU60733-200	TRIMMER CAPACITOR, LP CH-2 FO
	C3	QCFA1HZ-103	CAPACITOR
	C4	PU60733-200	TRIMMER CAPACITOR, LP CH-1 FO
	C5	PU60733-200	TRIMMER CAPACITOR, SP CH-2 FO
	C6	QCFA1HZ-103	CAPACITOR
	C7	PU60733-100	TRIMMER CAPACITOR, SP CH-1 FO
	C8	QCFA1HZ-103	CAPACITOR
	C9	QER51HM-105	E CAPACITOR
	C10	QER51HM-105	E CAPACITOR
	C11	QER51HM-105	E CAPACITOR
	C12	QER51HM-105	E CAPACITOR
	C13	QER50JM-476	E CAPACITOR
	C14	QCFA1HZ-103	CAPACITOR
	C15	QCFA1HZ-103	CAPACITOR
	C16	QCFA1HZ-103	CAPACITOR
	C17	QCFA1HZ-103	CAPACITOR
	C18	QCSA1HJ-560	CAPACITOR
	C19	QCSA1HJ-151	CAPACITOR
	C20	QCSA1HJ-271	CAPACITOR
	C21	QER50JM-476	E CAPACITOR
	C22	QCFA1HZ-103	CAPACITOR
	C23	QCSA1HJ-331	CAPACITOR
	C24	QCSA1HJ-121	CAPACITOR
	C25	QCFA1HZ-103	CAPACITOR
	C26	QER51HM-104	E CAPACITOR
	C27	QCFA1HZ-103	CAPACITOR
	C28	QER51HM-105	E CAPACITOR
	C29	QER51HM-105	E CAPACITOR
	C30	QCFA1HZ-103	CAPACITOR
	C31	QCFA1HZ-103	CAPACITOR
	C32	QER51CM-476	E CAPACITOR
	C33	QCFA1HZ-103	CAPACITOR
	C34	QFN41HJ-273	M CAPACITOR
	C35	QFN31HJ-103	M CAPACITOR
	C36	QER51HM-105	E CAPACITOR
	C37	QCSA1HJ-470	CAPACITOR
	C38	QCFA1HZ-103	CAPACITOR
	C39	QCFA1HZ-103	CAPACITOR
	C40	QCSA1HJ-7R0	CAPACITOR
	C41	QER50JM-476	E CAPACITOR
	C42	QCFA1HZ-103	CAPACITOR
	C43	QCFA1HZ-103	CAPACITOR
	C44	QCSA1HJ-121	CAPACITOR
	C45	QCSA1HJ-101	CAPACITOR
	C46	QCFA1HZ-103	CAPACITOR
	C47	QCFA1HZ-103	CAPACITOR
	C48	QCFA1HZ-103	CAPACITOR
	C49	QCFA1HZ-103	CAPACITOR
	C50	QCVB1CN-103	CAPACITOR
	C51	QCFA1HZ-103	CAPACITOR
	C52	QCFA1HZ-103	CAPACITOR
	C53	QCFA1HZ-103	CAPACITOR
	C102	QCSA1HJ-180	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C103	QCFA1HZ-103	CAPACITOR
	C104	QCSA1HJ-390	CAPACITOR
	C106	QCSA1HJ-180	CAPACITOR
	C107	QCSA1HJ-390	CAPACITOR
	C108	QCSA1HJ-120	CAPACITOR
	C109	QCSA1HJ-100	CAPACITOR
	C110	QER50JM-476	E CAPACITOR
	C111	QCFA1HZ-103	CAPACITOR
	C112	QCFA1HZ-103	CAPACITOR
	C114	QCSA1HJ-270	CAPACITOR
	C115	QCSA1HJ-120	CAPACITOR
	C116	QCSA1HJ-120	CAPACITOR
	C117	QCFA1HZ-103	CAPACITOR
	C118	QCSA1HJ-470	CAPACITOR
	C120	QCFA1HZ-103	CAPACITOR
	C121	QCFA1HZ-103	CAPACITOR
	C122	QCFA1HZ-103	CAPACITOR
	C123	QCFA1HZ-103	CAPACITOR
	C124	QCSA1HJ-681	CAPACITOR
	C125	QCFA1HZ-103	CAPACITOR
	C126	QER51HM-105	E CAPACITOR
	C127	QER51EM-475	E CAPACITOR
	C128	QCFA1HZ-103	CAPACITOR
	C129	QER50JM-476	E CAPACITOR
	C130	QCFA1EZ-104	CAPACITOR
	C131	QCSA1HJ-221	CAPACITOR
	C132	QCSA1HJ-120	CAPACITOR
	C133	QCSA1HJ-7R0	CAPACITOR
	C134	QCSA1HJ-680	CAPACITOR
	C136	QCSA1HJ-150	CAPACITOR
	C137	QCSA1HJ-560	CAPACITOR
	L1	PU48530-101K	PEAKING COIL
	L2	PU59152-181J	PEAKING COIL
	L3	PU48530-101K	PEAKING COIL
	L4	PU59152-820J	PEAKING COIL
	L5	PU59152-101J	PEAKING COIL
	L6	PU48530-101K	PEAKING COIL
	L7	PU59152-4R7K	PEAKING COIL
	L8	PU59152-270J	PEAKING COIL
	L9	PU59152-330J	PEAKING COIL
	L10	PU59152-330J	PEAKING COIL
	L11	PU59152-2R2K	PEAKING COIL
	L12	PU59152-100J	PEAKING COIL
	L13	PU59152-150J	PEAKING COIL
	L101	PU59152-560J	PEAKING COIL
	L102	PU59152-150J	PEAKING COIL
	L103	PU59152-390J	PEAKING COIL
	L104	PU59152-221J	PEAKING COIL
	L105	PU59152-100J	PEAKING COIL
	L106	PU48530-101K	PEAKING COIL
	L107	PU59152-470J	PEAKING COIL
	L109	PU59152-560J	PEAKING COIL
	L110	PU59152-220J	PEAKING COIL
	L111	PU59152-220J	PEAKING COIL
	L113	PU48530-101K	PEAKING COIL
	L114	PU59152-8R2J	PEAKING COIL
	L115	PU59152-121J	PEAKING COIL
	BKT1	PQ42955	BOARD BRACKET
	ETH1	PQ40433-2	EARTH LUG
	SCW1	DPSP2606Z	SCREW, X2, FOR BOARD
	SCW2	DPSP2606Z	SCREW, FOR BRACKET
	SLD1	PU36485	SHIELD PLATE
	SLD2	PU36486	SHIELD CASE
	SPC1	WBS2600Z	T.L.WASHER
	SPC2	PU59210-001	W.LOKING SPACER, X5
	TP1	PU56008	TEST PIN,X8 (1,3-7,GND1,GND2)
	CN1	PU56258-10	CAP HOUSING
	CN2	PU58844-5	CAP HOUSING
	CN3	PU58844-3R	CAP HOUSING
	CN4	PU58844-2	CAP HOUSING
	CN5	PU58844-4	CAP HOUSING
	CN6	PU58844-5	CAP HOUSING
	CN7	PU58844-3	CAP HOUSING

* * *

FLYING ERASE BOARD ASSEMBLY <46>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB30092A	FLYING ERASE BOARD ASSY
	Q1	2SA933S	TRANSISTOR
	Q2	2SC1741S(QR)	TRANSISTOR
	Q3	2SA933S(Q)	TRANSISTOR
	Q4	2SD639R	TRANSISTOR
	Q5	2SD639R	TRANSISTOR
	D1	UZ8.2BSC	ZENER DIODE
	D2	1SS133	DIODE
	R1	QRD161J-473	RESISTOR
	R2	QRD161J-472	RESISTOR
	R3	QRD161J-222	RESISTOR
	R4	QRD161J-473	RESISTOR
	R5	QRD161J-183	RESISTOR
	R6	QRD161J-104	RESISTOR
	R7	QRD161J-121	RESISTOR
	R8	QRD161J-104	RESISTOR
	R9	QRD161J-121	RESISTOR
	C1	QCVB1CN-103	CAPACITOR
	C2	QCC11EJ-123	CAPACITOR
	C3	QCSB1HJ-560	CAPACITOR
	C4	QCBB1HJ-820	CAPACITOR
	C5	QCVB1CN-103	CAPACITOR
	C6	QCBB1HJ-820	CAPACITOR
	C8	QCT25UJ-181	CAPACITOR
	C9	QCT05UJ-330	CAPACITOR
	L1	PU48530-560J	PEAKING COIL
	L2	PU48530-3R3K	PEAKING COIL
	L3	PU48530-3R3K	PEAKING COIL
	L4	PU59152-101J	PEAKING COIL
	T1	PU56175	S.TRANS
	SLD1	PU60779	SHIELD CASE
	SLD2	PU60781	SHIELD COVER
	SLD3	PU60780	SHIELD PLATE
	CN1	PU58844-3	CAP HOUSING
	CN2	PU58844-2R	CAP HOUSING
	CN3	PU58844-2	CAP HOUSING

* * *

SERVO BOARD ASSEMBLY <48>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PB10152A-01	SERVO BOARD ASSY
	IC1	HD49722NT	IC
	IC2	BU2767S	IC
	Q1	DTC124ES	TRANSISTOR
	OR	UN4212	TRANSISTOR
	OR	2SC3400	TRANSISTOR
	Q2	DTA124ES	TRANSISTOR
	OR	UN4112	TRANSISTOR
	OR	2SA1346	TRANSISTOR
	Q3	DTA124ES	TRANSISTOR
	OR	UN4112	TRANSISTOR
	OR	2SA1346	TRANSISTOR
	Q4	DTA124ES	TRANSISTOR
	OR	2SA1346	TRANSISTOR
	OR	UN4112	TRANSISTOR
	Q5	DTA124ES	TRANSISTOR
	OR	2SA1346	TRANSISTOR
	OR	UN4112	TRANSISTOR
	Q6	DTC144ES	TRANSISTOR
	OR	2SC3399	TRANSISTOR
	OR	UN4213	TRANSISTOR
	Q7	DTA124ES	TRANSISTOR
	OR	UN4112	TRANSISTOR
	OR	2SA1346	TRANSISTOR
	D1	1SS133	DIODE
	OR	MA165	DIODE
	D2	1SS133	DIODE
	OR	MA165	DIODE
	D3	1SS133	DIODE
	OR	MA165	DIODE
	D4	1SS133	DIODE
	OR	MA165	DIODE
	D5	1SS133	DIODE
	OR	MA165	DIODE
	D6	1SS133	DIODE
	OR	MA165	DIODE
	D7	1SS133	DIODE
	OR	MA165	DIODE
	D8	1SS133	DIODE
	OR	MA165	DIODE
	D9	1SS133	DIODE
	OR	MA165	DIODE
	D10	1SS133	DIODE
	OR	MA165	DIODE
	D11	1SS133	DIODE
	OR	MA165	DIODE
	D12	1SS133	DIODE
	OR	MA165	DIODE
	D13	1SS133	DIODE
	OR	MA165	DIODE
	D14	1SS133	DIODE
	OR	MA165	DIODE
	D15	1SS133	DIODE
	OR	MA165	DIODE
	D16	1SS133	DIODE
	OR	MA165	DIODE
	D17	1SS133	DIODE
	OR	MA165	DIODE
	D18	1SS133	DIODE
	OR	MA165	DIODE
	D20	1SS133	DIODE
	OR	MA165	DIODE
	R1	QRSA08J-682YN	RESISTOR
	R2	QRSA08J-102YN	RESISTOR
	R3	QRSA08J-155YN	RESISTOR
	R4	QRSA08J-102YN	RESISTOR
	R5	QRSA08J-103YN	RESISTOR
	R6	QRSA08J-105YN	RESISTOR
	R7	QRSA08J-102YN	RESISTOR
	R8	QRSA08J-102YN	RESISTOR
	R9	QRSA08J-102YN	RESISTOR
	R10	QRSA08J-222YN	RESISTOR
	R11	QRSA08J-273YN	RESISTOR
	R12	QRSA08J-475YN	RESISTOR
	R13	QRSA08J-333YN	RESISTOR
	R14	QRSA08J-392YN	RESISTOR
	R15	QRSA08J-153YN	RESISTOR
	R16	QRSA08J-182YN	RESISTOR
	R17	QRSA08J-105YN	RESISTOR
	R18	QRSA08J-273YN	RESISTOR
	R19	QRSA08K-395YN	RESISTOR
	R20	QRSA08J-105YN	RESISTOR
	R21	QRSA08J-273YN	RESISTOR
	R22	QRSA08J-274YN	RESISTOR
	R23	QRSA08J-393YN	RESISTOR
	R24	QRSA08J-475YN	RESISTOR
	R25	QRSA08J-334YN	RESISTOR
	R26	QRD161J-222	RESISTOR
	R27	QRSA08J-154YN	RESISTOR
	R28	QRSA08J-154YN	RESISTOR
	R30	QRD161J-102	RESISTOR
	R31	QRD161J-104	RESISTOR
	R32	QVZ3521-684	V RESISTOR, SW POINT
	R33	QRD161J-104	RESISTOR
	R34	QRSA08J-222YN	RESISTOR
	R35	QRSA08J-823YN	RESISTOR
	R36	QVZ3521-474	V RESISTOR, LP X2 NOR TK
	R37	QRSA08J-103YN	RESISTOR
	R38	QVZ3521-474	V RESISTOR, SP X2 NOR TK
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-223	RESISTOR
	R41	QRD161J-334	RESISTOR
	R42	QRSA08J-103YN	RESISTOR
	R43	QRSA08J-123YN	RESISTOR
	R44	QRSA08J-822YN	RESISTOR
	R45	QRSA08J-223YN	RESISTOR
	R47	QRSA08J-123YN	RESISTOR
	R48	QRSA08J-392YN	RESISTOR
	R49	QRSA08J-123YN	RESISTOR
	R51	QRSA08J-822YN	RESISTOR
	R52	QRSA08J-104YN	RESISTOR
	R53	QRSA08J-684YN	RESISTOR
	R55	QVZ3521-224	V RESISTOR, SP SLOW TK PRE-SET
	R56	QRD161J-473	RESISTOR
	R57	QRSA08J-154YN	RESISTOR
	R58	QRSA08J-274YN	RESISTOR
	R59	QVZ3521-104	V RESISTOR, LP SLOW TK PRE-SET
	R61	QRSA08J-684YN	RESISTOR
	R63	QRSA08J-104YN	RESISTOR
	C1	QCC11CK-102	CAPACITOR
	C2	QEK61AM-226	E CAPACITOR
	C3	QEK61AM-226	E CAPACITOR
	C4	QCSB1HJ-150	CAPACITOR
	C5	QCC11CK-473	CAPACITOR
	C6	QCBB1HJ-102	CAPACITOR
	C7	QEK61HM-105	E CAPACITOR
	C8	QCBB1HJ-102	CAPACITOR
	C9	QCC11CK-153	CAPACITOR
	C10	QCBB1HJ-561	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C11	QCC11CK-102	CAPACITOR
	C12	QEK61HM-105	E CAPACITOR
	C13	QEK61AM-226	E CAPACITOR
	C14	QCBB1HJ-101	CAPACITOR
	C15	QCC11CK-102	CAPACITOR
	C16	QFV71HJ-274	M CAPACITOR
	C17	QFV71HJ-564	M CAPACITOR
	C18	QFV71HJ-153	M CAPACITOR
	C19	QEK61EM-475	E CAPACITOR
	C20	QEK61EM-475	E CAPACITOR
	C21	QEK61CM-106	E CAPACITOR
	C22	QEK61CM-106	E CAPACITOR
	C23	QFV71HJ-334	M CAPACITOR
	C24	QFV71HJ-333	M CAPACITOR
	C25	QCBB1HJ-471	CAPACITOR
	C26	QFL31HJ-682	M CAPACITOR
	C27	QFL31HJ-102	M CAPACITOR
	C28	QFV71HJ-124	M CAPACITOR
	C29	QCF31HP-223	CAPACITOR
	C30	QCBB1HJ-101	CAPACITOR
	C31	QCBB1HJ-101	CAPACITOR
	C32	QCC11CK-102	CAPACITOR
	C33	QFV71HJ-224	M CAPACITOR
	C34	QEK61AM-226	E CAPACITOR
	C35	QFV71HJ-393	M CAPACITOR
	C36	QFV71HJ-274	M CAPACITOR
	C37	QFV71HJ-124	M CAPACITOR
	C38	QFV71HJ-393	M CAPACITOR
	C39	QCBB1HJ-102	CAPACITOR
	C40	QCBB1HJ-561	CAPACITOR
	C41	QFV71HJ-474	M CAPACITOR
	C42	QCBB1HJ-102	CAPACITOR
	TH1	NTH5D223KA	THERMISTOR
		OR NTH5D223LA	THERMISTOR
	TP1	PU45908-3	TEST PIN, X2,(1,GND)
	CN1	PU58844-4	CAP HOUSING
	CN4	PU58931-14	CAP HOUSING
	CN5	PU58931-12	CAP HOUSING
	CN6	PU58844-8	CAP HOUSING

* * *

DECK TERMINAL BOARD ASSEMBLY<51><53>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	PB20013D	DECK TERMINAL BOARD ASSY

-DECK TERMINAL BOARD ASSEMBLY<51>-

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA1	PB20013C1	DECK TERMINAL BOARD ASSY
R1	QRD181J-151	RESISTOR
R3	QRD181J-331	RESISTOR
PS1	PU60271	PHOTO INTERRUPTER
WR1	PW30110-26DD885	PARALLEL WIRE, NOT INCLUDED
CN1	PU59933-17	WIRE TRAP

-REC SAFETY BOARD ASSEMBLY<53>-

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA3	PB20013A3	REC SAFETY BOARD ASSY
	SW1	PU58644-1-3	REC SAFETY SWITCH

* * *

RELAY BOARD ASSEMBLY <52>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA2	PB20013C2	RELAY BOARD ASSY
C1	QCC11EJ-104	CAPACITOR
LC1	PU59736-471	N FILTER
LC2	PU59736-471	N FILTER
K1	PU60281-4	FERRITE BEADS
WR1	PW30113-G0ABZ62	PARALLEL WIRE

* * *

END SENSOR BOARD ASSEMBLY <54>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWBA	PB20013A4	END SENSOR BOARD ASSY
Q1	PN268R-NC	PHOTO TRANSISTOR
HD1	PQ31047-1-4	E.S.HOLDER
CN1	PU59945-102	WIRE SOCKET

* * *

CASSETTE HOUSING BOARD <56>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWB1	PB30043	CASSETTE HOUSING BOARD
Q1	PN268R-NC	PHOTO TRANSISTOR, START SENS
R1	QRD162J-471	RESISTOR
PHS1	PU58879	PHOTO INTERRUPTER, CASS.SENS
CN1	PU58844-106	CAP HOUSING

* * *

UPPER DRUM BOARD ASSEMBLY <62><63>

REF NO.	PART NO.	PART NAME, DESCRIPTION
PWB1	PDM3161	BOARD (UPPER DRUM), X2